16-12-03 10 Am

Bob Cooper's

DECEMBER 15 2003

# SatFACTS

MONTHLY

DISASTER Over !

Reporting on "The World" of satellite television in the Pacific and Asia

## IN THIS ISSUE

**Any Channel Anyplace Anytime**

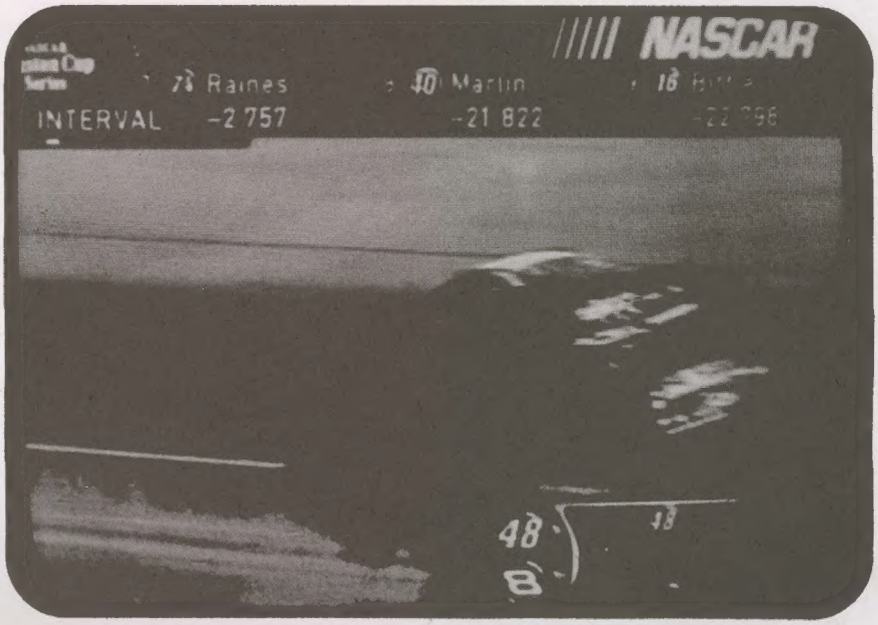
**Wi-Fi 2.4 GHz Explosion**

**Blind Search gets eyes and smarts**

- ✓ Latest Programmer News
- ✓ Latest Hardware News
- ✓ TV "after" satellite
- ✓ Observer Reports

**Vol. 10 ◆ No. 112**

**Price Per Copy: NZ$10/A$11/US-Eur$8**



# Phoenix Technologies

**Satellite Equipment & Accessories One Stop Supermarket**

Made In Korea

- Digital Audio Output (S/PDIF)
- Dolby Digital
- Wide Screen (16:9) Hot-Key
- S-VHS, CVBS & RGB Video Outputs

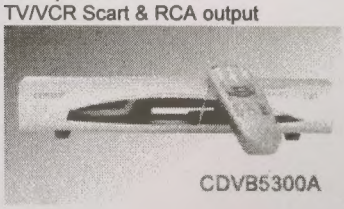
**HUMAX ACE S Receiver**
(Irdeto V2.06 CAM embedded) **$300**

**Supernet digital receiver**
(Iredto V2.09 CAM embedded) **$270**

## SPACE 5300A CI Receiver

(Two Common Interface Slots)

Auto PID correction
C & Ku band input
PAL/NTSC auto converter
5000 channels
Picture in picture EPG
DiSEqC1.0/1.2 control
TV/VCR Scart & RCA output
**$180**



CDVB5300A

## SPACE 2300 digital receiver

Auto PID correction
C & Ku band input
PAL/NTSC auto converter
5000 channels
Picture in picture EPG
DiSEqC1.0/1.2 control
TV/VCR Scart & RCA output
**$140**

## Phoenix JT3100T Digital Terrestrial Receiver

- Super-Fast Channel Scan
- Electronic Program Guide
- Channel Rename Function
- Software Upgradeable

**$220/each (for one box of 6 unit)**
**$200/each (for five boxes of 30 units)**

## NextWave 3220 FTA digital receiver (Made in Korea)

C & Ku band input
PAL/NTSC auto converter
5000 channels Picture in picture EPG
DiSEqC1.0/1.2 control
TV/VCR Scart & RCA outputs
**$160**

## NextWave 3220C digital receiver

(Two common interface slots) **(Made in Korea)**

C & Ku band input
High symbol rate >45,000
PAL/NTSC auto converter
5000 channels Picture in picture EPG
DiSEqC1.0/1.2 control
TV/VCR Scart & RCA outputs
**$220**

| | |
|---|---|
| **Irdeto 2.06B CAM** | **$160** |
| **65cm offset dish** | **$27** |
| **11.3 Ku LNBF** | **$25** |
| **Universal Ku LNBF** | **$25** |
| **Universal Mount** | **$15** |
| **RG 6 Dual cable** (305m/box) | **$85** |
| **Gold Card (10/bag)** | **$85** |
| **Silver Card (10/bag)** | **$135** |
| **Satellite finder** | **$35** |

## Optus C1 Aurora Kit

**Supernet digital receiver**
(Iredto cam embedded)
11.3 GHz/Universal Ku LNBF65cm dish, Mount bracket, 30m RG6 cable
**$395/set**
Aurora card $95

## LBC, ART, Al Jazeera Kit

**Supernet digital receiver**
(Iredto cam embedded)
C-band LNBF
2.1m Mesh dish
3' Pole
30m RG6 cable
**$495/set**
Subscription fee $30/month*

## Free to air kit

Including dish, LNBF, digital receiver, etc.
**Start from $3xx**

**Changhong 1000 Digital Receiver**
Aston 1.05 Cam embedded
*Best Value For Indian & Franch*
**(C-band on Asiasat 3s & Ku band on Intelsat 701)**
C & Ku band input, 2000 Channels,
**$200**

Full range of C/Ku band satellite dish - panel & mesh, prime & offset, from 45cm to 4.5m
Full range of C/Ku LNBF - Dual output, one cable solution, C/Ku combination
Full range of actuator - From 12" light to 36" heavy duty
DiSEqC 1.2 Positioner & SupperJack EZ2000 Positioner
2.4 GHz AV sender and Remote extender
RG6 Cable and Motor cable
Full range of satellite accessories

## THIS MONTH'S SPECIALS

SPACE 2300A FTA Digital Receiver $1400/(2 box, 5units/box)
Phoenix V-Box $600/(box of 10units)
18" Phoenix Actuator $360.00/(3 box, 4 units/box)
Irdeto 2.06B CAM $1400/(box of 10units)
Phoenix 2.3m Mesh dish $1650/(pallet of 10 sets)
Zinwell LNBF 15K C-band LNBF $648/(box of 24)
RG 6 Cable $700/(10 box, 305m/box)
65cm offset dish $125/(box of 5sets)

## Come To Us For Your Best Deals

**302 Chestville Rd. Moorabbin VIC 3189 Phone: (03) 9553 3399 Fax: (03) 9553 3393**

## Major Importer In Australia

Website: www.phoenixstrong.com.au Email: satellite@phoenixstrong.com.au

# SatFACTS MONTHLY

ISSN 1174-0779

is published 12 times each year (on or about the 15th of each month) by Far North Cablevision, Ltd.
This publication is dedicated to the premise that as we are entering the 21st century, ancient 20th century notions concerning borders and boundaries no longer define a person's horizon. In the air, all around you, are microwave signals carrying messages of entertainment, information and education. These messages are available to anyone willing to install the appropriate receiving equipment and, where applicable, pay a monthly or annual fee to receive the content of these messages in the privacy of their own home. Welcome to the 21st century - a world without borders, a world without boundaries.

Editor/Publisher
Robert B. Cooper (ZL4AAA)
Office Manager
Gay V. Cooper (ZL1GG)

Reaching SatFACTS
Tel: 64-9-406-0651
Fax: 64-9-406-1083
Mail: PO Box 330
Mangonui, Far North
New Zealand
Email-skyking@clear.net.nz

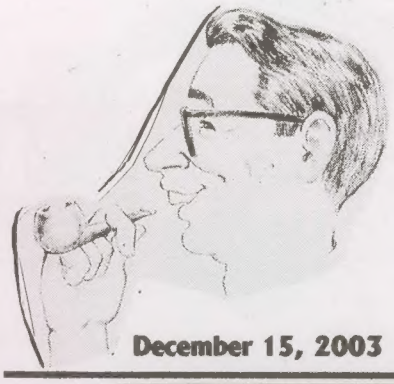
Subscription Rates
Within NZ: $70 p/y
Australia: AV-COMM Pty Ltd. PO Box 225, Brookvale, N.S.W. 2100
61-2-9939-4377
Elsewhere: US$75p/y
All copies sent via airmail fast post



The fine print
SatFACTS Copyright 2003 by Robert B. Cooper; any form of copying is a violation of our international copyrights.


our TENTH year!

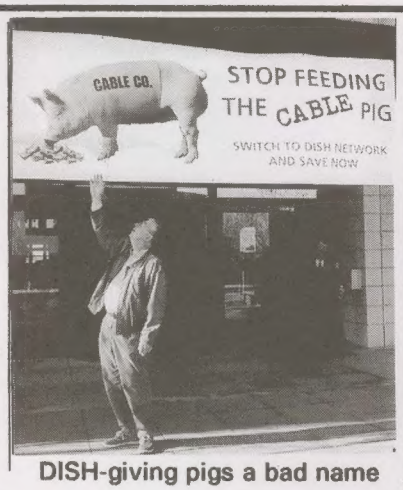
## COOP'S COMMENT



December 15, 2003

I no longer "travel well;" sitting in a seat designed for bipeds half my weight and size for 13 hours is not my idea of fun, anymore. But there is no more sensible way of going to Los Angeles and the USA so when duty calls, I fly. An unhappy flier - yes. But a flier none the less.

In mid-November, with SF#111 in the mails, I headed for the USA to visit two old friends from the 1980 era of home C-band systems. It began with a telephone call from friend "A" who passed me a web URL number and suggested I "follow the on screen instructions" that would allow my newly installed Telecom "Jetstream" connection to *move me* - space shift as it were - to Moscow or New York or London. "A" has created a new, innovative, software + hardware system that allows a person to take their home town TV with them, virtually anyplace on the planet. Kerry Packer could take 9-Melbourne (or any other combination of Australian TV channels) with him to Las Vegas, for example, and sitting in his complimentary suite provided by a grateful casino, tune in the 6PM news from home - even if it is 12 midnight (yesterday) in Vegas.




DISH-giving pigs a bad name

Our lead report, page 6 this month, details what I discovered about this newly developed system - minus whom you contact and where you go to do it yourself. That was part of the agreement that would allow me to go to America and see it, first hand. Those reading our report who believe they have a potential application of "TV2Go" can discuss this with me, privately, provided the potential user has US$20,000 in loose change and a healthy appetite to be the first on his block with the latest and newest "TV service delivery gadget" (see p. 31, here).

While in the USA I also took the opportunity to visit with friend "B" who has nothing to do with the new technology nor "A." "B" is in the satellite DTH field, delivering around 400 channels of Ku band service to anyone who has as little as $29.95 in their pocket and either no kerbside cable TV availability or perhaps has tired of sending money to the "Cable TV Pig" every month. In America there are two, highly competitive, Ku-band service providers. DirecTV, presently owned by General Motors but soon to be owned by Rupert Mudoch's Fox, is one of these. DISH TV, owed by Echostar, is the other. DISH started after DirecTV, and against horrendous odds, has now pulled up to within 1 million US homes of DirecTV. The scorecard is DirecTV 11+ million, DISH almost 10 million. I stopped at DISH in Denver (Colorado) for a few days to get a sense of what is happening in the American Ku band dish world these days. Out of 10 million homes served, DISH has placed hard drive recorder receivers in 1 million homes; that makes them the largest supplier of hard drive recorders in the world today. By comparison, Murdoch's English BSkyB has just over 100,000 hard drive (dish fed) receivers in the field. DISH has a network of installing dealers, 10,000 or so, who unlike Austar or Foxtel installers, actually participate in the revenue stream for each system they install. Their competition, DirecTV, favours chain shopping mall distributors with hundreds/thousands of stores (such as Radio Shack). In my humble opinion, DISH is doing it the best way, DirecTV is playing Monopoly with other people's money.

DISH is on a consumer growth drive by selling hard against the number-one competition; cable TV. Cable TV service costs more than DISH (and more than DirecTV), offers fewer channels, and generally is considered to be a money grubbing monopoly. Thus the "pig" message currently used in their advertising and on the banner I found outside their Denver headquarters. Competition? It still works. Lower prices, better service - quaint but functional.


**In Volume 10 ◆ Number 112**

New challenge to satellite - "the web!" -p. 6
Wi-Fi ... what you should know -p. 14
And again. Blind search uncloaked -p. 18

**Departments**

Programmer/Programming -p.2; Hardware/Equipment Update -p. 4; Technical Topix -p. 18; SatFACTS Digital Watch -p. 23; With The Observers -p. 27; -p. 28; At Sign-Off ("Going there...") -p. 31


**-On the cover-**

Can you spot the "difference?" Of course you can. But the margin between delivery of television via your telephone line and satellite is narrowing every week. This is not cable TV! We explore the status of broadband, high speed, Internet.

# LETTERS

CNBC decision for New Zealand

"The Sky NZ decision to drop CNBC (SF#111, p. 2) from their line-up was based upon surveys which revealed the channel was little watched and not of interest to most subscribers."

John Martin, TVO, NSW

It is a sad ending for CNBC which attended our industry's original trade shows with great enthusiasm including being a corporate sponsor in 1996 of that year's Auckland gathering.

Austar in motels

"Vacationing, I found motels my family stayed with typically carrying six Austar channels (we are in a rural region, not Foxtel here!) but of interest, no two motels out of three carried the same Austar channels. Two were common to all (Fox Sport One, Movie 1) but after that each motel seemed to have the option of selecting the channel(s) they wished. Have others noticed this?"

DD, NSW

Loosening rusted nuts, threads

"A product named INOX, manufactured by a firm called Canadian Industries Pty Ltd. (with a factory in Queensland) is superb for freeing up rusted bolts (and nuts). I have yet to find something so badly corroded that it will not free up (although surely there is such a bolt in my dish-disassembly future). It also works to protect steel threads from corrosion if applied at the time of an installation; it is an Aerosol family product (web site is www.inox-mx3.com)."

IF, Queensland

S-band LNBs

"Read with interest report (SF#110) on Chinese S-band LNBs - is there a distributor in Australia or New Zealand where I might buy 1 or 2 for my amateur TV transmission system?"

Michael McDonald, VK3ZQV

To the best of our knowledge, no distributor has yet picked up on this innovative product. Contact factory direct as Xie Xiaoyang at airui@mail.hf.ah.cn.

Rolling out FM radio links

"For past 10 years we have been broadcasting LPON radio services in Brisbane region. Our total service area is in the shape of the letter G with us in the middle - measuring 150 km north x south and 70 km east by west. There are nine new sites we would like to activate, but linking between them is a challenge. Is there someone with satellite experience who can help us work through a Ku link option?"

Jeffrey Shaw, info@australiatrade.com.au

**Per chance a reader at Optus, or an independent consultant, can contact Jeffrey? His answer might be as simple as connecting to Telstra.**

# PROGRAMMER PROGRAMMING PROMOTION UPDATE

**DECEMBER 15, 2003**

**Broadband - connected everywhere?** The WCA Symposium, scheduled January 21-24 at the USA Fairmount Hotel (San Jose, Ca), is the "showcase" for 2004 "broadband technology business applications." If you have an interest in Wi-Fi links and broadband as it exists today - go to www.wcai.com. Well, almost as it "exists today." In fact, by reading pages 6-15 here, you will be exposed to broadband applications that are so new and so far ahead of the current state-of-the-art that even this annual event won't have them on the agenda.

**ABC TV is promoting ABC Asia-Pacific service** - as a notice to Australians travelling beyond the shores that their "home town TV service" is now available throughout Asia and the Pacific. (And if not at their holiday destination, ask for it!).

**Al Manar**, Lebanese based terrestrial TV station carried in Australia by TARBS, has been yanked from the airwaves because of concerns the station is directly financially linked to the terrorist group Hizbollah. The Australian government has placed Hizbollah and associated groups on a "banned in Australia" list. In the same "family" of news, Al Arabiyah, carried on MMDS channel 46 by the Moscow (Russia) MMDS system, was the first to broadcast a November release Saddam Hussein audio tape urging "loyalists" to step up the attacks on coalition forces. A number of middle eastern channels with Arabic roots have similarly been charged with transmitting violence-inciting programming. Al Arabiyah, after airing the Saddam tape, was banned from having an on-ground rep in Iraq - one example of the quick response of the coalition folks when they feel they are being "too helpful to the enemy."

**Another Chinese bouquet** - AsiaSat 4 (122 E). First apparent full-time video (could be a test, however) has appeared on 2003 launched AsiaSat 4 on 3881Hz, Sr 26.500, 3/4. However, the number (quantity) of Chinese service channels available through As2, As3, As4 (and others) is now approaching 50. There should be a healthy Chinese speaking FTA market throughout Australia/NZ and the Pacific.

**"No numbers - please."** The official "count" of how many FTA systems were sold from the mid-August TVNZ announcement that they would be offering a "Rugby World Cup Channel" free-to-air on satellite, through mid December, is unknown. But TVNZ appears both "pleased" and cautious about the results. Installers reporting to SF say the single biggest market has been bars and clubs where having non-stop RWC rugby, even after the live events ended, daily from 3AM to 4PM (or after), was a considerable house-draw. How TVNZ might use this "channel space" after previously announced December 20 close-down of post-event rugby coverage remains unknown. TVNZ believed that if the total number of satellite equipped locations (homes plus commercial) reached 20,000 nation-wide, they would consider making this service channel (but NOT as Rugby) permanent. How many? Not even close according to our monitoring of receiver sales; fewer than 2,500 nation-wide.

**Free-X TV for Australia?** Adult service which requires a specific receiver designed with (embedded) CA on board is scheduled late January-February on NSS-6 (95E). No monthly fees, just buy the receiver (already in stock at Strong Technologies ++61-3- 8795-7990).

**Pay XXX for NT, ACT** and offshore? Iacob Keness (MediaStar; 61-2-9618 5777) advises "Blue Kiss 1 hard-core" and 2nd "soft core" on As3S December 13 (3669V, Sr 13.333); Viaccess 2.5 cards, $199 each from MediaStar.

**Seventh Day Adventists** launching new 24/7 service PAS-2 (4040/1110H; Sr 5.900, 2/3). Service being called "Hope TV" - formal "launch" 1 January, testing now; definitely not "X-TV!".

**December 17**. Sir Arthur C. Clarke celebrates 86th birthday. The Godfather of all that we do.

**Latest C1/B3 loading changes: Report begins p. 22, continues p. 28 this issue.**

# S 20

# Satellite Digital and Analogue Television Bit Error Rate Meter

The S20 is a new hand held Digital and Analogue satellite TV instrument for 920 - 2,150MHz. Measurements include True Bit Error Rate, Signal Level, Digital Channel Power, Digital Carrier to Noise Ratio, Spectrum and Expanded Spectrum; all presented on an wide screen graphic Liquid Crystal Display. Some routine measurements are executed Automatically, whilst others are simplified. An optional Network Identification Table card will automatically identify satellites and their orbital slots from data stream info. The case is protected against falls and blows by a moulded rubber holster and the keyboard has been designed to withstand dusty and humid hostile environments.

Menus guide users through selection of functions that include powering an LNB, Programming QPSK reception parameters and Data Logger programming. Different parameter settings can be stored in 100 Program memories.

Those familiar with Unaohm's pioneering SBM105 Satellite BER meter have judged the S20 an instant hit.

Internal Ni-MH battery life can be extended with optional external batteries and the instrument can recharge whilst still being used from the mains switch mode power supply included or 6V DC.

Accessories included are the mains power supply/ battery charger and the moulded rubber holster.

S20, exciting Sat TV instrumentation that needs neither a mortgage to buy it or a sherpa to carry it.

©2003 Laceys.tv

- **QPSK true BER and Digital C / N.**
- **Digital and Analogue measurements.**
- **Spectrum Analysis with two Markers and Full 10 MHz Span.**
- **MAX, MIN & FREEZE Hold functions for special signal analyses.**
- **View any 7 transponders simultaneously.**
- **Data Logger records Signal Level.**

Laceys.tv TM

12 Kitson St Frankston VIC 3199

Tel (03) 9783 2388 Fax (03) 9783 5767

e-mail: info@laceys.tv

Branches in Sydney, Ulverstone and Woolgoolga

**"The man" finally writes us**

"We require the following corrections to be printed in your next edition. Firstly, that Coship originally designed and STILL manufactures it (the blind search 3188C)! This corrects statements in July issue p. 31, where SatFACTS states that DMS is the originator of the 3188C. And that the 3188C is no more. Secondly. That the 3188C is always in production, and not old stock waiting for Satlink to purchase, as stated in SatFACTS October p. 31. Third. The 3188C is NOT Scartless - this is in fact a factory option. Also, please note that we supply spare parts regularly to our distributors. This is done automatically with each order, free of charge (this corrects a statement you made about power supplies). We are very pleased with the market response in NZ and the marketing efforts made by our distributor, Satlinlk NZ."

Rick Lee, Shenzhen Coship Electronics Co. Ltd.
E-mail ligonfan@coship.com; www.coship.com

**Others "comment" on the blind search status p. 18-20, here.**

**Internet via satellite**

"On this planet we use cables over land and for personal transport, the car. Why don't we use satellites more for communication; or the airplane more for long trips? Why do we humans for communication and traffic use the ground first? I flew small airplanes for 27 years including over long distances such as the Atlantic Ocean. I demonstrated time and time again that a small airplane is cheaper, faster, and more comfortable than a car for all but short distances. Anyone who has struggled with European vehicular traffic already knows that air is the only way to go. Flying is too dangerous? Statistics prove otherwise on a per mile travelled basis. We as a species cling to the earth rather than use the spheres above. But for a long time they blamed every airplane accident on a construction fault so in the end the insurance for the liability to build an airplane cost almost as much as the airframe. This same mentality transferred to the construction and launch of satellites - insurance to get the bird 'up there' costs as much as the actual device. And this results in satellite user costs which are beyond the reach of all but the most needy commercial firms. Here in the Pacific, where the density of population is too low to dig in the ground and bury cables, we are totally dependent on satellites. And for this simplistic system, we are asked to pay US$100,000 to get the same Internet connection folks in my home country of Switzerland receive at no charge. It is all very crazy and sadly the gap between those who have and those who do not is widening with every new technical innovation.

Beldi Hansjakob, Honiara, Solomon Islands
hansjbeldi@runbox.com

**One perhaps more affordable option could be the new Thai Shin Satellite (see p. 30); around $1,000 (US) for 85cm transmit-receive dish package and delivery speeds to 1 Mbit/s.**

# HARDWARE EQUIPMENT PARTS UPDATE

**DECEMBER 15, 2003**

**Not NDS - after all?** Now we are being "told" that Foxtel may have changed their mind about switching from Mindport's V1/2 to an NDS format of CA in Australia. Hot-chip Technology (www.hotchip.com.au) offers a "receiver suitable for Aurora," an IRD with a CI-module that has been multi-cammed. There follows a long list of encryption systems which the modified CAM is supposedly capable of handling, including "NDS." Whether such a receiver and multi-CAM actually exists, and would/might work with NDS Australia is a moot point if the new indications about NDS are correct. For example, go to 12.438(H) GHz, C1, selecting "C1T14" and observe the video running on the 'SWAP/SWP" channel. It clearly shows a "red" Irdeto card being inserted into a UEC version Foxtel receiver, with the following EPG text: "FOXTEL Smartcard swap required. Foxtel recently sent you a letter and a new red smartcard. To restore service follow the instructions in the letter. If you did not receive it call the FOXTEL smartcard swapout line on 1800 007 052 (open until midnight EDT each day)." The purpose of "SWAP/SWP" is to give Foxtel users guidance in replacing their existing Foxtel cards with new cards which the firm is apparently now issuing to subscribers. So is NDS not going to happen in Australia? Apparently not - but, stay tuned, and, see p. 22 here.

**DVD recorders versus hard disc drives.** Prices are dropping rapidly world-wide. We saw DVD-R, DVD+R, DVD-RAM combo disc(k) recorders for US$450-$500 nation-wide in USA in November. PVR (hard disc(k) recorders are slightly more and there are some that do both - disc-disk plus PVR with typically 80Gb of hard drive recording space. In Australia, Panasonic's DMR-E50 is a 12 hour DVD-RAM/6 hour DVD-R recorder (A$999); E60 is a DV, SD and PC for A$1299. Panasonic DMRHS2 40 Gb hard drive allows 52 hours of recording (in lowest definition option) plus DVD RAM and DVD-R and PC slot - A$1299. Top end DMR-E100 has 80 Gb hard drive, 104 hour recording, DVD-RAM and DVD-R + DV, SD, PC card input for A$2499. What is missing is a multi-standard (PAL, NTSC as a minimum) DVR or PVR - the USA models only do their NTSC, the Australia (and New Zealand) versions only PAL.

**Two satellite channels,** same time, one receiver? Check out Relook 3000 Linux software operated O/S Twin Receiver from aDigitaLife.com; an Australian firm. PDF file available explains the features.

**Some terminology and numbers.** Those carefully reading our extensive groundbreaking report on the status of TV via Internet (p. 6, here) will have many questions. Here are a few answers. The launch or server site works best with 768 Mbit/s capability. Yes, 384 will "launch" but even if the data rate is throttled back by the receive PC to 384, the 768 provides "headroom" which experience is teaching is important in an uncertain PSTN world. PSTN? **P**ublic **S**ervice **T**elephone **N**etwork - the connection between the server source and the receiver. The server site can be configured to "transmit" two or more simultaneous data streams, allowing the receive site to "select" the best-functional PSTN data rate for a particular receive location; 256/384/512/640/768 - pick any two or three - for a specific server-to-receiver pathway that suits the conditions between the two through the PSTN. For near-broadcast-quality PSTN connections, 768 at server and 768 at receiver is as far as you really need to go - based upon tests SF participated in at receive sites in Monte Carlo, USA, Caribbean with Moscow as the origination point. Confused? Turn to p. 6.

**Satellite PSTN?** Of course. For around US$900 per month, PanAmSat will deliver 384Mbit/s 24/7 to any site in the Pacific. With the video system server located in USA, even at Napa PanAmSat, there is nothing to impede direct delivery of full time (24/7) service from USA to virtually any Pacific location through a link arranger such as sales@pacificip.com. Big bucks per month? Yes, but consider the alternative: No TV worth messing with. Downside? There are copyright issues and USA (for example) programming to Guam, American Samoa, et al will work but not to (for example) New Caledonia. Paris to New Caledonia? Piece of cake.

LBF
French Digital TV
Australia

Self Employment:

# Pay TV Installers "French Digital TV"

LBF Australia Pty Ltd subsidiary of Canal Caledonie
is looking to extend its market across Australia
and is currently looking for several experienced installers
in order to join their team.

## The ideal candidates would possess the following attributes :

**Positive and enthusiastic**

**Professional and business-like demeanour**

**Team player**

**Sound people skills and communications skills**

**Self starter with good organisation skills**

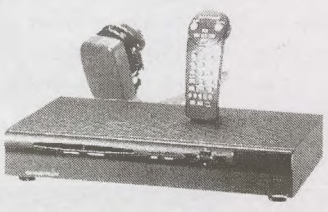
**5 years minimum in Pay TV industry**

A proven track record in the sales environment would be highly regarded.
Remuneration will be based on commissions Must have a ABN and insurance.

Written applications only stating personal details, qualifications
and relevant work experience should be forwarded to :

**LBF Australia Pty Ltd**

Attention : The Project Manager
2/331 Balmain Road
Lilyfield NSW 2040
Australia
E-mail : abonnement@lbf.com.au



Friend or foe??? -

# The inevitable march to high speed Internet delivery

There are 8 "bits" in one "byte." Remember that as you read onward.

Twenty-five years ago a MIT clairvoyant named Nicholas Negroponte prophesied, "What is today delivered by wire will one day be delivered by wireless; and that delivered by wireless will be delivered by wire." Remember that as well.

Change is frightening, especially when you have hitched your business wagon to a tool or system which is threatened by the change. It is human nature to be put off, be sceptical about, even angry at, "change." Remember that as well.

Change in telecommunications usually means a new delivery vehicle, something not previously used, to reach either individuals (point to point) or "the masses" (point to multipoint). The telephone 'network' was first launched in 1886 by Alexander Graham Bell. The British Post Office official position, when asked about introducing the telephone in England, issued this statement:

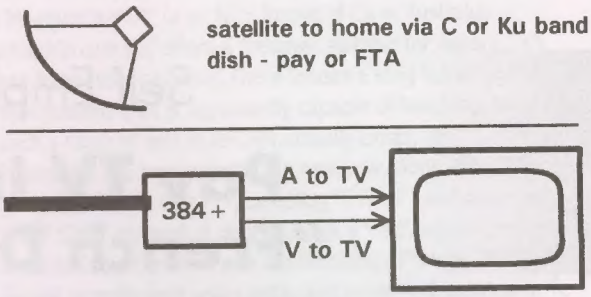
"Our present system of messenger delivery boys suits our needs."

Delivery boys, couriers today, still exist. So does the telephone. When television was introduced in the 30s (UK), 40s (USA), 50s (Australia) and 60s (New Zealand), some pronounced "radio dead." Of course radio did not die. When cell phones the size and weight of mature bricks were introduced in the late 80s, it was forecast that landline phones would die. But home and business PCs arrived on the scene at about the same time and landline telephone connections have never earned their owners more money than they do today.

When someone creates a new use for an "old tool" (such as the telephone), or an entirely new device (such as Ku-band DTH), there are those who embrace the new technology with open arms and those who run from it clutching their hearts in an imitation of the television series star Redd Foxx proclaiming, "this is the big one." It seldom is - "the" big one. Death is *not* just around the corner.

What you are about to learn, surely for the first time in such detail, is the current "state-of-the-art" for the transmission of real time, quality-image (and companion sound) "television" sent through telephone wires. As recently as five years ago, optimists forecast that "one day (soon, they said) software would be developed to allow standard 1930-1940 era telephone wires to deliver reasonably high quality television into the home." Almost nobody believed that forecast.

The telephone company (any telephone company) is an aggressive marketeer of its services. TV commercials depict individuals spread throughout the globe "exchanging video clips" on cell-fone like devices without regard to whether their existing network can actually support such a service, or whether the latest Nokia or other cell-fone can duplicate the grossly exaggerated hype of the TV commercial. Truthfulness in advertising is not a benchmark of your local telephone company.




Go back and relook at our front cover. The top photo is a USA originated auto race, distributed via C-band satellite. The bottom photo is the same race, same time, via "the web," at SatFACTS in New Zealand.

It is therefore something of a surprise that the telephone company has - to date - totally missed on identifying a use for their network which is, in reality, happening right now - today - perhaps without their knowledge.

This is a report detailing how, with a modestly "fast" Internet connection in your home or office, you can access not one or two "made for Internet video" services but rather an entire menu of regular TV channels, with a video quality which closely approximates what you would expect from a VHS tape

What it takes to do high-quality TV via Internet (?)

With appropriate pre-transmission video processing:

1/ 256 kbps produces occasional freeze frames if "receiver" is equipped for video equivalent of 256 "de-emphasis"

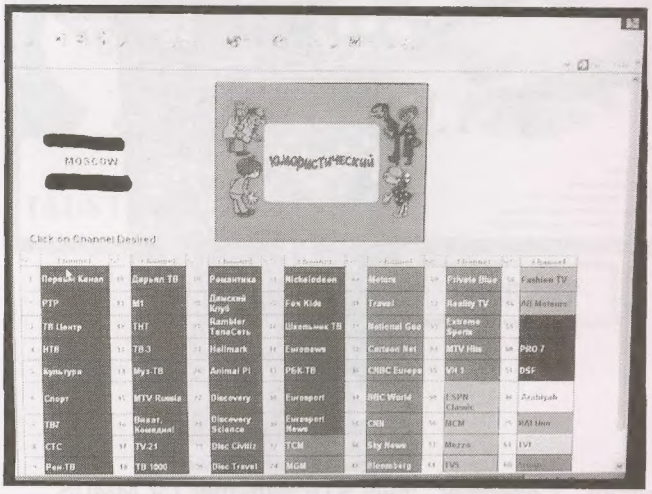
2/ 384 produces no freezing with VHS (300-330 line detail) if transmission end is also using 384 (or greater; 768 'launch' preferred) kbps and video (audio) has been pre-processed.

3/ 512 is not materially better than 384, unless video is standard "Win Media 9" format (which is not considered state of the art by anyone except Microsoft).

4/ 640kbps has no real advantages to 384.

5/ 768 is considered the "Holy Grail" for Win Media 9 users but produces images no better than 384 when 384 has been "preconditioned" by appropriate video pre-processing software.

Note: "High quality" is herein defined as being the equivalent of 25 frames per second (PAL) or 30 fps (NTSC) although most leading edge systems use a "progressive" (non-interlaced) design based upon what is today standard in the PC world.



Moscow (Russia) server site carries 66 channels of MMDS (2.1 + GHz; "wireless cable) service world-wide including full compliment of (22) local Moscow channels (balance are universal channels such as Fox Kids - dubbed into Russian, CNNI in English etc.). Site allows user to view channel listing (left hand photo, above), "click-on" channel you wish to view, and then that channel appears on screen in reduced-size box in centre of screen. Double (right) click image, it expands to full screen (right hand photo). Cost? Sit down- US$20,000 for installation of PC and software in Moscow, and one year of "service ." User pays his/her own 384 kbps local-telco rate for actual "distant delivery."

- and getting better each month. It is all about two factors which we believe will only improve with time. The first of these is the thru-put" speed" of the world-wide web itself. And the second is the image quality as a function of that delivery speed *and* the software that "preconditions" the video prior to web transmission.

It's "the software - stupid"

When US Democratic Presidential candidate Bill Clinton ran for election in 1991, the internal workings of his campaign revolved around a hand printed sign posted in the campaign headquarters:

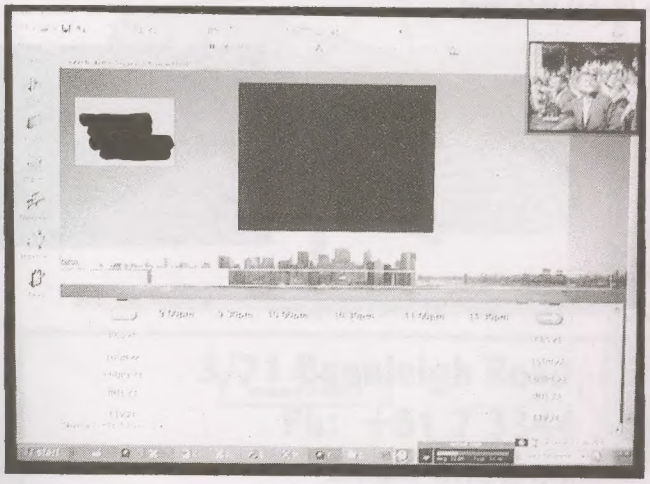
"It's the economy, stupid."

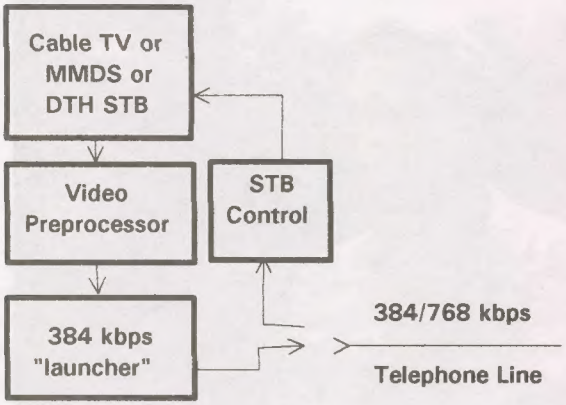
2003. It is the software. A very clever programmer can create video-content manipulating software which breaks the image content down into subparts, and then turn these subparts into special "highlighted" data stream segments. One of the original MPEG-2 "tricks" was to identify which lines or line-segments in the video image changed from frame to frame, and then in a new "frame transmission" send only the changes. That, indeed, is the heart of MPEG-2 technology. And once you have electronically isolated the "changes" from the last frame, it then becomes possible to manipulate those changes resulting in enhanced definition for the entire image in the next successive frame. It is a game of electronic mirrors - sleight of hand, with electronic data streams substituted for "Mandrake the Magician." It's all in the software. And the software is anything but stupid.

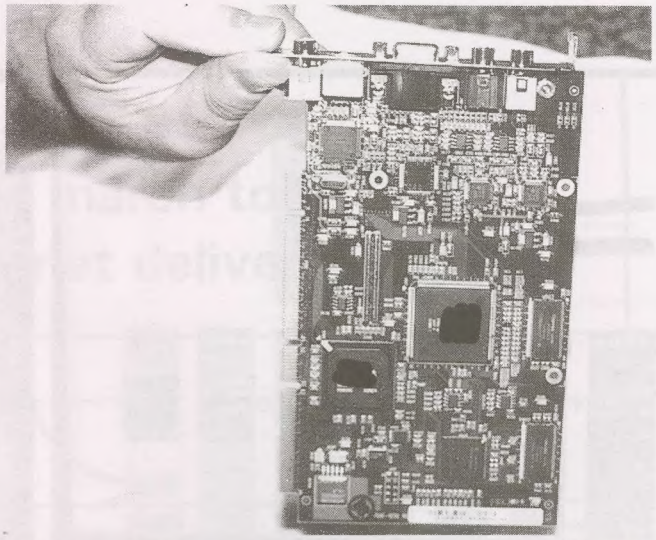
Clever, fast software can turn any image from reality into virtual reality. Shrek (the movie) is an apt example - you "know" it is a cartoon, but as you watch the images unfold, you

New York (City) server site provides access (via individual subscription) to 255+ channel Time-Warner (AOL) cable service. "TV Guide" lists channels and programmes currently being offered; user "clicks" on channel/programme they wish (left hand photo) and site switches T-W/AOL "cable box" to that service for near-instant delivery to any 384 equipped web-connected site in USA (*).

(*) - Copyright is in play here - service requires USA address to "complete" connection; see text.





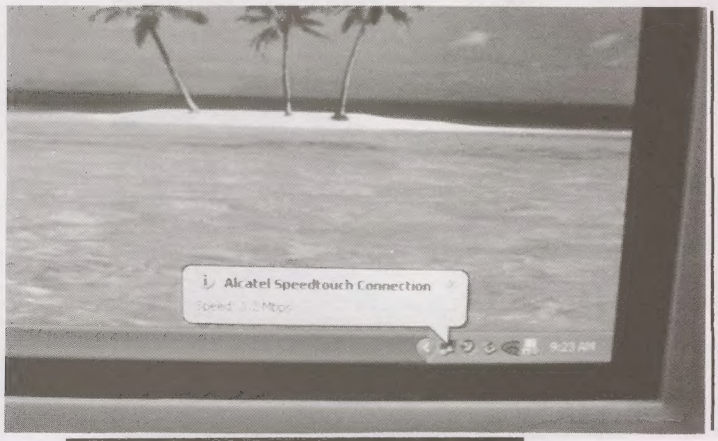



System (greatly simplified) is shown in left hand block diagram. "Consumer" level STB, whether for MMDS (Moscow), cable (NY [City]) or DTH (virtually anyplace on planet) is "married" to "Internet server" at location where cable/MMDS/satellite signals are available. STB is "interrogated" by remote viewing location, using standard "at home" RCU (remote control unit) - "your bedroom TV set" - via web-connected instructions, selects channel chosen from menu, and "switches" to that channel on command just as if user was in same physical location as actual MMDS/cable/DTH receiver (left hand diagram). Programming chosen is then fed through video/audio pre-conditioner/processor (right hand photo) to 768/384 kbps thru-put web service line for delivery to any other 384(256)kbps "receive location on the planet." True world-wide "my bedroom tonight is in ...." extended service.

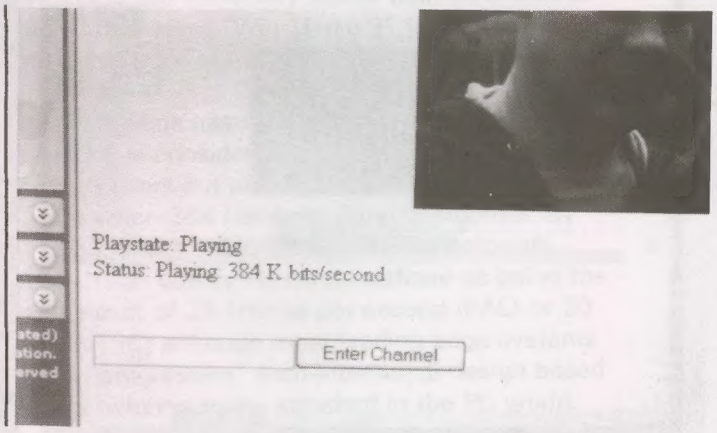
forget it is a cartoon and soon become so immersed in the graphics and story line that it is no longer a cartoon in your mind. Software, once again.

Conventional wisdom is that you need several megabytes of data flow (bandwidth) to create "real" live television, as practised via satellite. At the bottom of the Mbit/second satellite world, for example, is Fashion TV (AsiaSat 3S) which stumbles along at speeds frightfully close to the web delivered services we display for you here. The greater and faster the scene changes, the action on the screen, the more data required to convey that "action" accurately on the screen. Ten years ago, five years back, even last year - that was true. No more. In fact, as our examples here show, you only need a few hundred kilobytes of data (per second) to convey virtually any full action movement on the screen. *Provided.*

Speed. It's all about thru-put speed. From the origination ("launcher") server through the interconnecting web grid to the "receiver" location. In this demonstration example, SatFACTS office in rural New Zealand has NZ Telecom "Jetstream" connection (3.2 Mbps - *bits*, not bytes - speed indicated [left hand photo, below]) when connected. In actual connection (right hand photo, below) "status" line advises delivered speed is "384 K bits/second" and lower left corner of the Moscow image is viewable. The full Moscow image appears just above (right) this text.





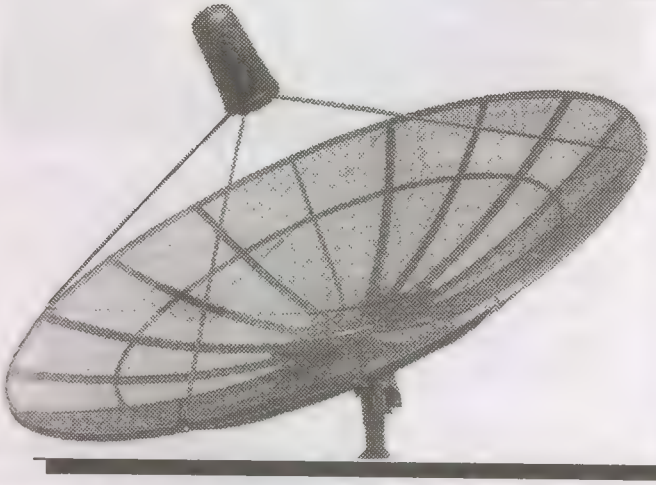



# PACIFIC SATELLITE (AUSTRALIA) PTY. LTD.

## ANTENNA & ACCESSORIES SUPERMARKET

DMF227

SM-8



SPACE®

Economical, light duty, general purpose usage

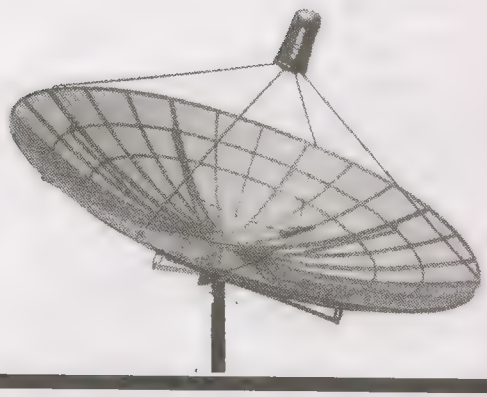
PSA

Reliable, medium duty can be used in windy areas

**One brand does NOT fit all; at Pacific Satellite you have mega-choices - three name brands!**

Pacific Satellite is the EXCLUSIVE authorised DISTRIBUTOR for COMSTAR antenna products in Australia.

ST-12



COMSTAR®

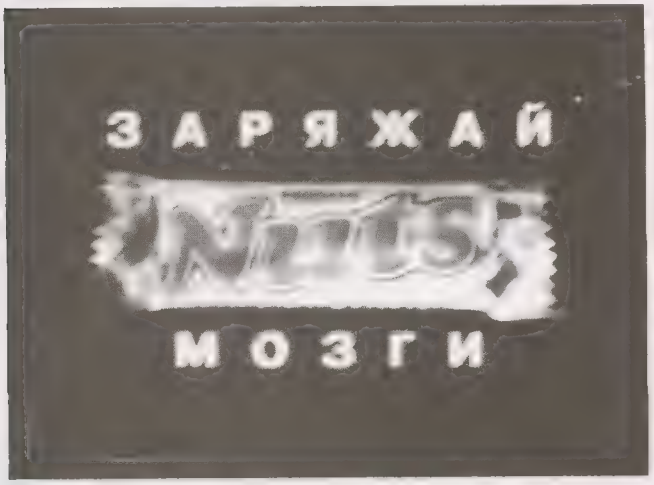
Strong, heavy duty, suitable for cyclone areas

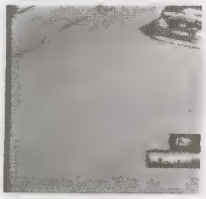
**...is a registered trademark for the world's BEST C/Ku Rolled Expanded Metal 2 - 13 GHz antennas!**

Comstar products are simply unbeatable - available from 7 feet to 16 feet and everyone a winner!

Products are also available through following quality distributors:
**Seto Electronic Services** (NSW) Tel: (02) 9743 6053 Fax: (02) 9743 6053
**V-Com (Australia) Pty Ltd** (VIC) Tel: (03) 9886 8018 Fax: (03) 9886 8787
**Universal Satellite TV (N.Z.) Ltd.** (New Zealand) Tel: (64) (9) 274 7998

**3/71 Beenleigh Road, Coopers Plains, Qld 4108 Australia**
**Ph: +61 7 3344 3883 Fax: +61 7 3344 3888**
Email: info@psau.com http://www.psau.com



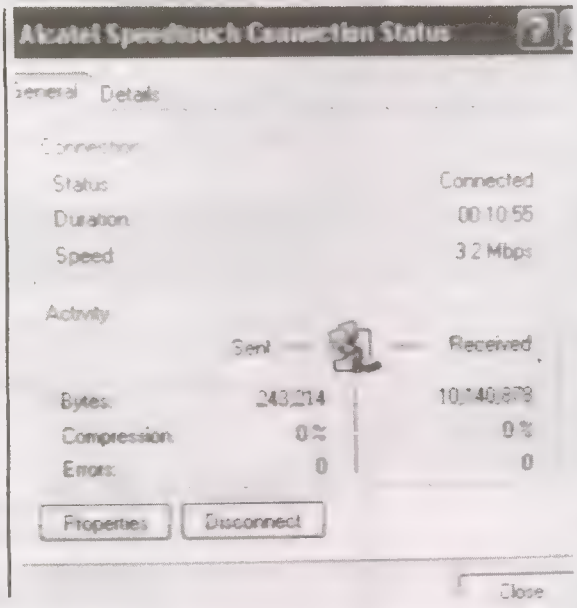



Enter Channel

Lack of thru-put speed. In a planet-circling link, the origin material *passes through* many (often dozens) of "servers" or relay points. A temporary "traffic jam" at any of the thru-put sites reduces the "speed" of the data received and briefly - a second or two, sometimes longer- and the last complete image received "freezes" on screen until "normal" speed returns. Here (left) image from Moscow has briefly frozen during candy bar commercial (audio typically continues without freezing/glitching). Delivery speed during a "freeze" drops below even 256 K bits/second (right hand photo - not taken during candy bar freeze); 203 K bits in this instance. A "broadband/high speed" delivery system with a maximum of 256 is marginal at best.

*Provided* you reduce your expectations. In fact, the gap between what the average viewer will accept as satisfactory and what a professional video engineer will fault is a constantly narrowing "gap." Digital technology is "dumbing down" what people will accept as a suitable "minimum quality" because services such as Foxtel and Sky NZ are constantly reducing the data stream flow in exchange for cramming more and more separate "entertainment channels" into a single satellite transponder.

As our front cover illustrates, two totally separate data streams delivering a full action race track auto competition over an 8,000 mile path (North Carolina to New Zealand) comes out surprisingly close - in video quality - when one is transmitted via 8 megabit per second SDTV through satellite and the same image is simultaneously delivered via a 384 Kbit/second telephone line. Of course you *can tell* which one is higher definition - but the video quality gap between the two is narrowing, every week and every month. *It's the software, stupid.*



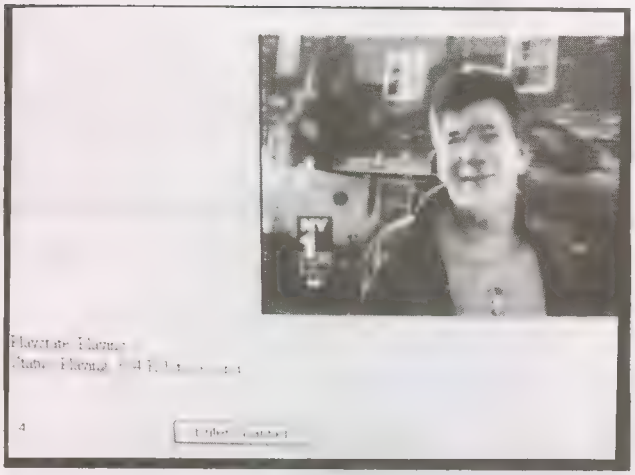

Thru-put bytes. In 10 minute 55 second "session" with Moscow, the web passed 10,140,878 "bytes" of data at connection speed of 3.2 Mbps while creating "live TV from Russia" to New Zealand.

The telephone company challenge

Late in October, software giant Microsoft announced they were conducting tests in Canada in partnership with a telephone firm; "real-time television" to the home, through the telephone line. Similar tests using various high speed telephone techniques (DSL, ADSL) have been ongoing for nearly a decade. All share one aspect in common - the telephone firms see themselves as future cable companies, stock piling 50, 100, 200 "channels" of information in a "central office server" (COS) and allowing consumers to dial up the server and request a particular channel be sent from COS to their home - on demand. Think about it. Cable TV sends 50, 100, 200 channels through coaxial cable, fibre or a combination of the two right into the home, and the subscribing viewer makes his or her viewing selection based upon their own choice. At any instant, the viewer chooses from the multitude of channels all of which are "resident" inside of the cable set-top box. DTH works the same way - all of the channels are there, awaiting viewer selection. The "switching" between channels is done at the set, inside the STB.

Microsoft's plan is different. Only one channel is actually coming into the home; the "STB" sits in the COS. And that's because most telephone company connections (the copper wire connecting the COS with the home) can support but a single DSL/ADSL video channel at a time. The clever software in the home is simply a system to select which one of the many channels "resident" at COS will be switched into the home at any given instant.

But what if the COS, where the channels are available for interconnection, is not in your town but tens, hundreds, thousands of miles away? If they are at some distant site, the effect is the same. The in-home software simply selects which channel to send to the home at viewer request. *Provided.*



Private links. Remember - these are *not* public or broadcast web-links; each one is installed for and used by a single user. There is no "magic URL number" which allows you, outside the close-knit user family, to even "browse" in Moscow (or New York) TV (or the nearly one-dozen others now operating or going in; such as London and Tokyo). The cost, today, of such a private origination-server plus receiver-"decoder" is in the range of US$15,000 plus the costs associated with subscribing to the origin point pay-TV service (cable, satellite, MMDS) and an annual fee in region of US$5,000 to have an at-origin-point server-administrator available to "tweak" the equipment should there by a system problem. Here, (left) New York's WCBS TV, flagship station of the American CBS network and (right) "New York 1," a CNN-for-New York local Time Warner (AOL) cable service linked out of New York - the city.

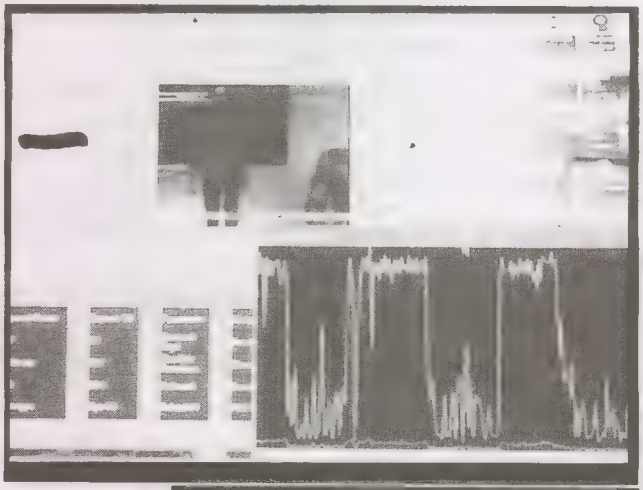
*Provided* the telephone circuits between the home and the distant "COS" are good enough that the channel selected can be telephone-system (web) connected to the home with the same approximate quality that the neighbourhood COS would provide. It turns out your local COS is high speed, fibre optic connected through a series of high speed, high bandwidth "servers" to the world-wide Internet grid. This means the thousands of miles of undersea and over land fibre-optic connections encircling the globe are for all practical intent largely "transparent" to bandwidth; the "COS" you want to "dial-up" can just as easily be located in Moscow or New York or London as a local area COS a few kilometres from your home. The fibre web grid makes this possible.

In the examples shown here, a 256 - 384 Kbps DSL/ADSL local link connected to the neighbourhood COS relays the distant-origin video (+ audio) source into the home just as if it were in fact originating at the local COS point. It is the growth and maturing of this planet covering grid that makes it possible for you to "tap into" Moscow or other distant TV just as if it was in fact coming directly from the local COS.

Expensive? You bet!

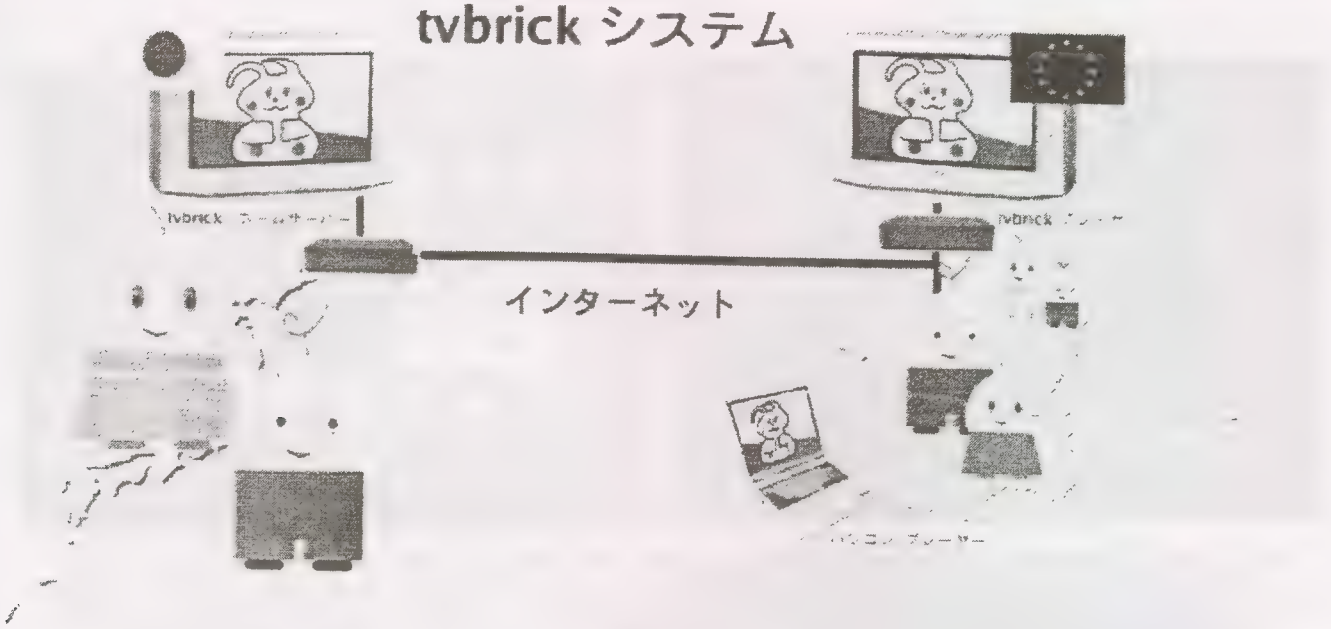
US$20,000 plus transport and lodging costs for the installer., including one year of local service from the cable/satellite/MMDS provider. Each user has his or her own dedicated origin-source PC "launcher" - this is not "broadcast" (point to multipoint) service. Access to the individual launchers

More than a "relay service." Our unnamed service provider is in gen-3 (third generation) operational aspect of the service and now routinely includes programming information for each individual uplink site. For example, New York includes Yahoo version of the TV Guide for the 255+ channels available through Time-Warner (AOL) cable connection; select a specific programme, "click on" and you are there. In Moscow, users must be capable of using Cyrillic alphabet to properly read the channel guide information available. Left, below, Moscow drama. Right, below, built-in software system diagnostic display.



**Debut: 2003-07-07**

## tvbrick システム




Home TV System: PAL B/G/H (Europe, Asia)

Options: Standard TVBrick

One you can "buy" off the shelf. TV Brick is a French created, Taiwan built, Japan-sold lower grade of "Any TV from anyplace to any other place - on the planet, via the web." The downside: It is "9 frames per second - maximum" which means because of reduced bandwidth/compression/processing ability, the system is not providing real time, *full motion* video (the audio is real time); a video slide show sending essentially, every third frame (and skipping the "other two"). Price? Around US$1,000. www.tvbrick.com.

is password controlled, each time the owner-user connects, there is an automatic logging of when the log-on occurred, what channels were viewed and for how long. This is all about copyright and "staying clean" with the copyright folks. It follows the "my bedroom tonight is located in XXXX" logic, supported by, "I pay for this service (to the cable/satellite DTH/MMDS provider), I am the only party using this service, it is private to my own personal use - and I am supplying the extension wire connection to *my bedroom* at my expense."

You have not been exposed to this service previously because the creators have elected not to promote it. Even their web site is unlisted! The primary application to date has been for government officials such as stationed at the UN. Yes, many countries "export" a home-language TV service (for example, RAI from Italy, NTV from Russia) but these satellite fed services are seldom the same service one would have even from the same channels (RAI, NTV) if one was in Rome or Moscow. If you have been stationed at the UN by the Russian Government, you already subscribe to NTV as a single channel delivered through the USA DISH or DirecTV Ku DTH services. But Moscow actually has 23 local channels, including NTV - and the home town NTV is quite different from the polished, sanitised satellite version. With a web server in Moscow, fed by the 66 channel MMDS service, the Russian delegates to the UN now have access to all of the home town TV, just as if they were in Moscow.

Portion of Moscow 66+ channel service

| N* | Channel | Genre |
|---|---|---|
| 1 | Первый Канал | General Interest |
| 2 | РТР | General Interest |
| 3 | ТВ Центр | General Interest |
| 4 | НТВ | General Interest |
| 5 | Культура | General Interest |
| 6 | Спорт | Sports |
| 7 | ТВ7 | Sports |
| 8 | СТС | General Interest |
| 9 | Рен-ТВ | General Interest |
| 10 | Дарьял ТВ | General Interest |
| 11 | М1 | General Interest |
| 12 | ТНТ | Movies |
| 13 | ТВ-3 | General Interest |
| 14 | Муз-ТВ | Music |
| 15 | MTV Russia | Music |
| 16 | Виват, Комедия! | Movies, Comedy |
| 17 | TV-21 | Movies |
| 18 | ТВ 1000 | Movies |
| 19 | Романтика | Movies |
| 20 | Дамский Клуб | General Interest |
| 21 | Rambler ТелеСеть | Educational |

Enter ethernet and Wi-Fi. Newsweek for November 24 devotes considerable page space to the broadband explosion now running rampant world-wide. One portion of the report is titled, "Keeping Up with Wi-Fi" and it explains how wireless on-ground distribution of Internet has become the fastest growing segment of web service and equipment sales during the last 12 months. What is important here is not the report but rather that it is in a non-technical (consumer) "news" magazine. Wi-Fi and all aspects of broadband have now become household conversation topics - at least in America. Soon, in your town as well.

Broadband (translation: higher speed than a typical home or business telephone connection) is an ill-defined loosey-goosey area of technology. Some telephone firms, trying to extract more money per month from consumers, call anything faster than a 28/56 kbps connection "broadband" or "high speed." It works in increments of 128s - once you get to 128 (14, 28, 56 etc.). 128 is indeed faster (more data delivered in a measured

# JOYSAT SATELLITE DISH ANTENNA

**Why Choose**
***JOYSAT* Mesh Dish ?**

**6 REASONS!**

1. Cost effective, economical
2. Heavy duty frame, strong mesh
3. Suitable for windstorm areas
4. High performance, high gain
5. C & Ku bands; 2-13 GHz
6. Choice of colours: black, brown, cream and dark green

**AND 7 MORE reasons!** 2.3m, 3.07m, 3.7m, 4.5m, 4.9m, 6.1m and 9m!!!

Designed and Manufactured by JOYSAT PTY. LTD.

2 / 1, Stockwell Place, Archerfield. Queensland 4108 Australia.
Tel: 61-7-3255 5211 Fax: 61-7-3255 5126
www.joysat.com E-mail: info@joysat.com

The staff at JOYSAT
wishes you and your family
Merry Christmas and Happy New Year!

span of time) than 28. The *minimum* requirement for processed video is in the 256 region and 384 is where you really want to be.

A Microsoft video processing software known as "Win Media 9" is also required for video (our unnamed service from Moscow or New York provides users with a custom designed software board that plugs into the receiver-PC which functions like a supercharged version of "9"). Normal TV arrives at your TV set using something called "interlace scanning." PCs use a different video processing system called "progressive scanning" (see p. 20, here). Our unnamed service provider converts the input TV image to progressive scanning because that is what the receiver at the other end of the circuit (a PC or a progressive scanning monitor tied to the PC) requires. This also saves on bandwidth in the transmission process - a "trick" to obtain better quality TV images through the web without sacrificing image detail. The web delivered image can also be reconverted back to interlace scanning at the receive end with an inexpensive image converter. A side benefit of progressive scanning, other than its matched-to-PC video system processing, is that in the conversion to progressive, the system suddenly no longer cares whether the original video was SECAM (Russia), NTSC or PAL. Progressive is progressive - neutral when it comes to the long established and now tired analogue modulation formats.

**Ethernet** is the delivery of "broadband" (high speed) Internet in a facility such as a hotel. Marriott Hotels, Hiltons and others now routinely offer 256 or 384 (varies from site to site) "broadband" into your lodging room. A traveller from New York can take his home-town-TV with him to a Marriott in Los Angeles or Houston by simply using an ethernet cable to connect the wall socket to his laptop PC. And once plugged in., clicking on "favourites" will allow selection of his home-town-TV through his "bedroom Internet connection."

**Wi-Fi** is wireless ethernet. Most Wi-Fi uses one of the 11 (in USA) available 2.4 GHz range license-free channels radiating up to one-watt of power into an omni-directional (all directions; 360 degree coverage) antenna located say on the rooftop of a hotel, or, even a phone booth in downtown Manhattan. During the past year there has been a huge growth in the availability of Wi-Fi in heavy traffic areas - such as airport waiting lounges. Most (not all) Wi-Fi are user supported.

You walk into a Qantas boarding area, sit down and unpack your laptop. Turn it on, click on Wi-Fi and bingo - a tiny Wi-Fi transceiver located up in the rafters connects you to Internet. Typical charges are in the $5 to $10 region for an hour (or portion there of) of use. Yes, it will take your credit card as payment.

Now you are "web connected" and a tiny Wi-Fi card plugged into the USB port on your laptop (with a built-in antenna) sends your instructions through the (Qantas boarding area)

Wi-Fi "base station" and retransmits to you the web data or site you have selected. Just like being plugged in with a hard wire - only there is *no wire*.

So Wi-Fi is "the web without wires" and they are springing up in the tens of thousands world-wide. For around US$1,000 investment and a rental fee paid to whomever owns the real estate where you stick the gadget, you too could be a collector of $9 an hour from hapless travellers stuck where only your base station gets them back into the web.

Wi-Fi comes in several flavours and the table (below) shows what you can expect if buying the hardware for your home, for example (commercial installations, atop a phone booth at a busy traffic location, an airport are more involved and cost more than the dollars shown in the table). "802.11b" and "802.11g" are Wi-Fi formats. 11b was the original, 11g is the "new-improved" while WiMax is six months into the future. Some aggressive people have already "cashed in" on this system, installing hundreds in their area, and collecting those $9 charges each hour (or portion thereof) when someone "checks in" and uses their connection point. Because Wi-Fi is license free (assuming you do not exceed the radiated power levels allowed in your country), it is a bit like the wild west in America at the moment; those who get locations first, after dealing with the location owners and working out a deal, are in on the ground floor of a potentially very profitable business.

Wi-Fi will deliver TV as well. But note the "users per antenna" column (below). Video is a bandwidth gobbler and if 802.11b might support (a maximum of) 32 users at each Wi-Fi site, that is not true if everyone is watching "home town TV" simultaneously. Under those bandwidth gobbler circumstances, the number of simultaneous potential users would drop to around 8-10.

At one of the demonstrations we witnessed while researching this report in the USA during November, we happened to have the opportunity with a 802.11g Wi-Fi site to use a pair of laptops, connecting one to Moscow and the other to New York City at the same time. How do you "spell" crowd control in an airport lounge? Dozens of people in minutes pushing and shoving and poking to get a glimpse of this amazing feat - sitting in an airport watching TV from thousands of miles away!

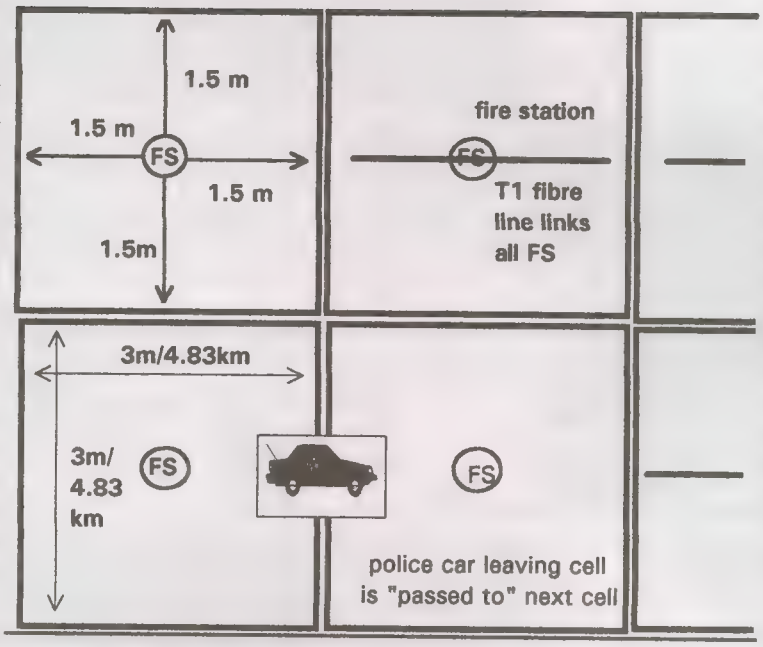
One "it should be obvious" aspect of Wi-Fi. A Wi-Fi site is dual purpose - it transmits (up to 1 watt of radiated power in USA), and, it receives the response signal originating in the user's laptop. Almost no laptop Wi-Fi USB plug-ins are 1 watt rated (10-30 milliwatts being more typical). Therefore the "transmit range" (Wi-Fi to laptop) can be significantly greater than the site's receive range (laptop to Wi-Fi base). There are some unresolved challenges here - sticking a more powerful Wi-Fi transmitter into the laptop is one answer but 1 watt of

| | 802.11b | 802.11g | WiMax |
|---|---|---|---|
| Base Station | US$60-$100 | US$100-$500 | Not yet available |
| Max Speed | 11 Mbps | 54 Mbps | 70 Mbps |
| Max Range | 150 feet/45m | 150 feet/45m | 30 miles |
| Users per antenna | 32 | 64 | "thousands" |

power gobbles up laptop battery capacity at an alarming rate. The usual engineering answer is for the Wi-Fi sites to use multiple transceiver locations so that that 150 feet/46m range they anticipate has overlapping coverage from several separate Wi-Fi "base stations" - even inside a typical airport lounge.

The Wi-Fi Extension

Now - suppose you have a Wi-Fi application where you really do need two-way ranges that are greater (much greater) than 150 feet/46m. Is there an solution for this?




For the answer to this we travelled to a Central California city where the local police department is conducting an open bid expansion project with US$750,000 in federal grant money to spend. Here's what they hope to get for their three-quarter of a million dollars.

Most American cities locate a fire station at 3 mile intervals. The community is divided up into 3 mile square (9 square mile) blocks and in the centre of each block, a fire station. This is fortunate because a fire station has the "roof area" and typically a beefy climbable steel tower with room to mount antennas.

The project. Each police car is already equipped with a highly specialised laptop portable PC (a product manufactured by Motorola - "The Black Box"). The PC can be loaded with appropriate software to process virtually any type or format of modulation. All of the fire stations are ring-connected with a T1 (1+ Mbps) fibre optic line to the central headquarters.

The police cars will be equipped with digital format cameras, plugged into the Black Box. The police officer fires up his/her digital camera, enters a command into the Black Box and the video (and audio) which the camera captures is transmitted through a 2.4 GHz in-car 1 watt transmitter to the nearest fire/base station. From there it goes through the T1 line to the central police headquarters. Yes, this is "extended range" Wi-Fi.

In theory, and as it turns out in tests we witnessed, as a vehicle approaches the perimeter of a 9 square mile "block" the car has an automatic (computer chosen) choice between one, two or even three separate fire department base stations; kind of like GPS ranging, on the ground. Sometimes tall buildings block the 2.4 GHz signal from the nearest "base station" while a more distant station is "loud and clear."

The car's are equipped with an antenna that looks for all the world like an encapsulated (fibreglass, covered) "whip antenna" for 150 MHz. But inside the covering is an 8-bay "collinear" (gain multiplying) antenna. The 19 inch "whip" antenna has around 10 dB of gain at 2.4 GHz. At the base station site, the 360 degree coverage circle is divided into 4 x 90 degree "squares" with a separate 1 watt transmitter connected (at the antenna to avoid or reduce transmission line losses and expense) for each of the four "quadrant" transmitters. This, with a highly sculptured coverage pattern for each antenna, adds more "dBs" to the circuit equation. Add to this a 20 dB gain receive-side low noise amplifier. Both the mobile transmitters and the base transmitter have 1 watt outward bound amplifiers, and, to boost the incoming receive signals, the at-antenna-mounted receive preamplifier. With AGC. That's automatic gain control, to monitor the signal level being received, and to adjust the system "AGC window" so that the data receive error rate is optimised for each transmission received. Pretty nifty.

2.4 GHz signals, even if radiated from the base station as vertical polarity signals, tend to reshape and reformat while in flight; bouncing off of buildings, trees and anything semi-solid. The system we witnessed uses a "command data link" between the base station and the target police car. Switching at a rate of up to (adjustable) 200 times per second, the transmitted signal from the fire station base point runs through vertical, horizontal, right hand circular and left hand circular polarisations looking for the best signal (lowest data error rate). When found, it locks and cements the exchange between the roving police car and the base station which at that instant has the best signal (again, lowest error rate). It is not always the fire station base which serves the 9 square mile ground-block the car is located in at that moment.

Uses. "The finger print pad." A detainee/suspect places his hand onto a blue-coloured glass pad and instantly the fingerprints are scanned, sent through the system as described and then at a rate approaching 500,000 per minute compared with known prints on file. This finger print search is sped up by also sending a couple of "mug shots" of the detainee (front shot, left and right profile) from the car's digital camera to the headquarters. While the prints are being compared, a separate search is underway against all mug shots on file of previously stopped or incarcerated individuals. Yes, it is getting harder and harder to slip through an American police noose these days.

The system is two-way of course - mug shots and relevant information about people the police wish to detain is to be "downloaded" from headquarters to each police car through the network. Incoming data such as this goes directly into "the Black Box" and is available for instant recall by the officer(s) using the vehicle. Hard paper prints, produced by "the Black Box," are a key stroke away. And the "TV" connection?" Under consideration - constant feeding of news services (Fox News, CNN) on a separate "channel" (remember - there are 11 Wi-Fi operating channels in the USA). Live media coverage of events of importance to even roving police car personnel is now considered a "part of the mix" in the USA.

# SRT 4800 II

- 4000 Programmable Channels
- Dual Common Interface Slots
- DVB, MPEG-2 Compliant
- C/KU Band
- SCPC/MCPC Reception
- 2-45 Ms/s Symbol Rate
- Loop Through Tuner
- Autoscan, Autoprogram
- PID Insertion
- Picture In Graphics
- 4 Digit LED
- DiSEqC 1.2
- 64 Universal LNB Control
- Mechanical Polarizer Control
- 0/12 V External Switching
- RS-232C Service Port
- Upgradable Software
- Data Transfer Between Units
- Teletext
- Electronic Programme Guide (EPG)
- Parental Lock
- Auto Power Back On
- PAL/NTSC Modulator
- 21-69 UHF PLL Modulator
- VCR Loop-Through on Stand-By
- Digital Audio Output
- Auto Voltage (AC 80-260V) SMPS

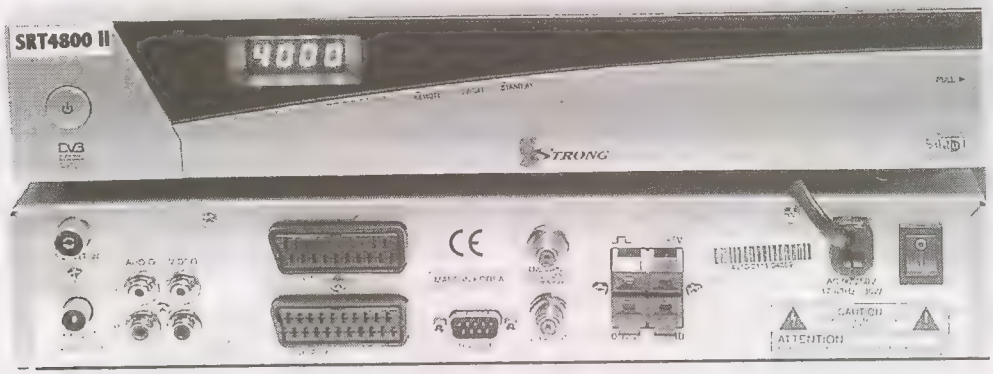
STRONG Technologies

www.strong-technologies.com

*Twin Slot Common Interface*

# *THE ALL NEW SRT4800 II*

## *IS NOW AVAILABLE FROM YOUR STRONG DEALER*




### *FEATURES*

Dual CI slots
4000 Programmable channels
Teletext Decoder
Digital audio out
Picture in graphics
Electronic program guide
NTSC to Pal converter
DiSEqC 1.2
Data transfer between units
Upgradable from our Web site
Full factory warranty and spares backup
C Tick approved for Australia and New Zealand

**Can be supplied with**

**2.06 IRDETO CAM**

**2.09 IRDETO CAM**

**See your *STRONG* Dealer for our complete range of satellite receiving equipment**

- ***NSW*** **ELECTROCRAFT** 02 943 83266
- ***TAS*** **EXTRA CHANNELS** 03 63348255
- ***QLD*** **NATIONWIDE ANTENNA SYSTEMS** 07 3252 2947
- ***WA*** ***NORSAT*** 08 9451 8300
- ***VIC*** **STRONG TECHNOLOGIES** 87957990
- ***New Zealand*** **HILLS INDUSTRIES** 09 262 3052

STRONG Technologies PTY LTD
ABN 35 097 861 731

***AVAILABLE***
Irdeto 2.09 cams
Aston cams

Internet: www.strong-technologies.com - E-mail: admin@strong-technologies.com
Unit 2, 1-3 Westpool Drive, Hallam, Victoria 3803, Australia
Tel: +61 3 8795 7990 - Fax: +61 3 8795 7991

# TECHNICAL TOPIX

And the claims go on - on - on

"It has come to our attention the Powtek FTA blind search receiver has been copied into what people have been calling the Innovia. We are here to let the public know, the Powtek is the original version of this type of receiver. The Innovia is a copy with the same software functions as the Powtek. The factory which produces these have assured us the Powtek is the original and has the better capabilities in respect to front end operations. The factory has only produced the Innovia, on request, to another (Chinese) factory to which it has demand for. Powtek is a brand of a manufacturer, this manufacturer produces the Powtek for themselves and the Innovia for the Innovia Co. Recently, Innovia has taken the lead in producing the software for both models. The Coship, as far as I understand, is made by Coship with no relation to either Powtek nor Innovia. Please note - the Powtek carries C-tick and CE approvals -as opposed to the Innovia."

Jason Racic, The Team @ DigitaLife.com
(www.aDigitaLife.com)

"A small error in your SF#111 report comparing the Innovia and Satwork blind search receivers; the Innovia uses the Sti5518 chip and not the Fujitsu processor. And the mechanical polariser is available as a factory option on the Innovia but not sure if the NZ importer will include that option here. Perhaps we should refer to them all as 'Sti5518 clones?"

Craig Sutton, suttonc@ihug.co.nz

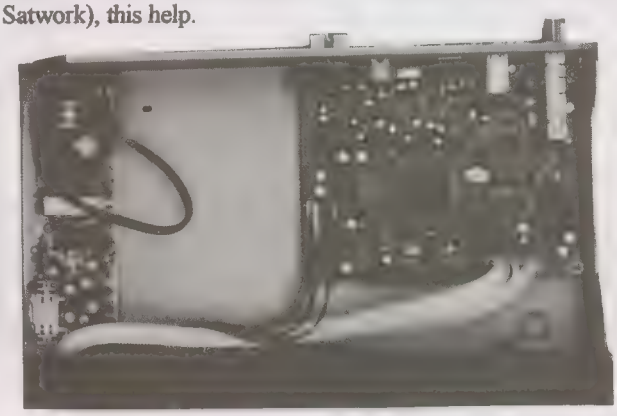
"The MB87L2250 looks to be no different that more popular integrated DVB demux/MPEG decode/CPU chipsets. Use of silicon is funny in the STB industry - basically it is ST and anything else. The 'anything else' chips often find their way into the FTA market products as this is the end of the market with very little (profit) margin to work with and it is possible to get away shipping product that may never be tested against (claimed) specifications. Pressure to rectify faults, from the consumers, is often non-existent (as opposed to boxes supplied to be used as a part of a broadcaster's [pay-TV] platform). Say what you will about the pay-TV versions, but at least there is a qualified individual or committee carefully scoping out every function of the box before it goes into mass production. FTA distributors seldom have the technical capacity nor time for such a luxury. The front end and the demod are the pacing items for the STB. Reading between the lines of the article on page 10 (SF#111), I sense not only bad code in the scan routines (with one STB not even paying attention to the SI which makes it possible to keep track of carriers/services previously found/services recently found) but also I detect what are probably front end problems. I have personally done complete design work on two similar boxes which would scan for QAM-transmodulated DVB-S carriers and then operate on the satellite SI despite being used on a cable system. Question: Has anyone who is designing blind scan done so without using one of the common garden variety front ends (tuners)? The most common suppliers I come across in this area are Samsung, Sharp and Thomson. At the end of the day, barring a really anaemic CPU or picking the wrong flavour of one of the modules, blind scan to work properly is a demonstration of coding ability. From what I have read in SatFACTS, those software creators doing the coding to date have only been capable of producing something that is less than top-of-class. Perhaps what will shake all of this out is for someone who really knows code being assigned to the project to make fool/duplication/error proof the blind scan routine. I don't think we've seen that happen to date."

RR, Hong Kong

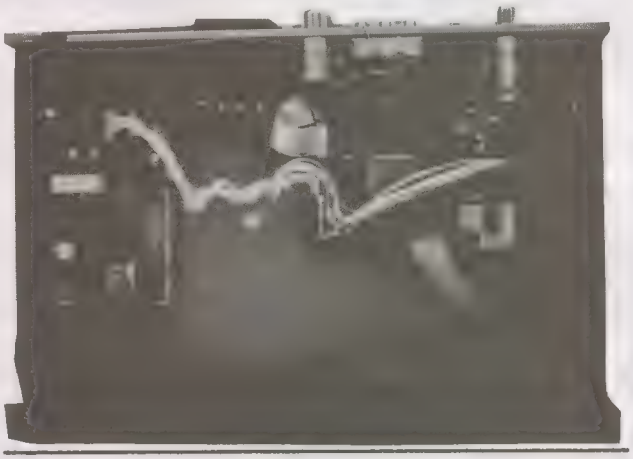
By way of introduction, RR holds an engineering position with a top satellite firm in the world, responsible for creating specifications in support of his firm's CA required STBs - and then conducting exhaustive tests of the products submitted before making recommendations to his employer. His comments therefore carry an unusual amount of "weight" and should be considered "gospel" by those seeking to understand why a much publicised STB fails to do some of what it claims to do, when sitting on your bench or shelf.

Not the same

For those obsessed with whether one factory builds all four known blind search receivers (Coship, Innovia, Powtek, Satwork), this help.



This (above) is the interior of the Satwork ST3618 IRD (SF#111, p. 10). Compare it to the Innovia IDS 3088 (below) and you will quickly see they are not even slightly similar.



Those who own a Powtek (or Coship) can by removing 4-6 screws do their own comparison with the two interior layouts shown here. Are we any closer to determining who started the current rush to blind-search? No.

# Christmas Specials

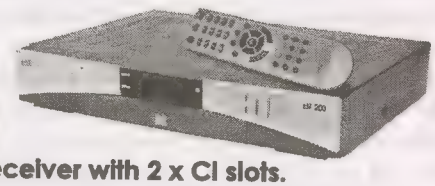
KRISTAL electronics

**Kristal Electronics**
**25 Cataract ave Rangewood**
**Townsville, Queensland 4817**
ABN 78010884938

Phone: (07) 47888902
Fax: (07) 47888906
eMail: philip@kristal.com.au
Web: http://www.kristal.com.au

## SATELLITE

eMTech
**eM200**

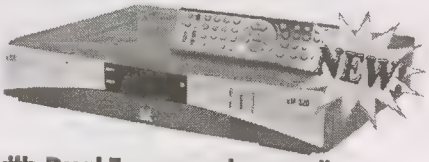


**Digital Satellite Receiver with 2 x CI slots.**
The eMTech 200 is a Satellite receiver with two built-in CI slots for CI cams. Features Stylish design, SP/DIF out, 256 colors on screen display and Satellite radio.
*Package Price with Irdeto 2.09 CI cam* ***$399.00*** *inc GST.*

eMTech
**eM300PVR**

**Satellite Receiver with CI slots and recording**
With the eMTech 300 you can record up to 22 hours of video onto the internal 40Gb hard drive. Also features Time shift function, allowing you to pause live Television and watch it later
*Package Price with Irdeto 2.09 CI cam* ***$699.00*** *inc GST.*

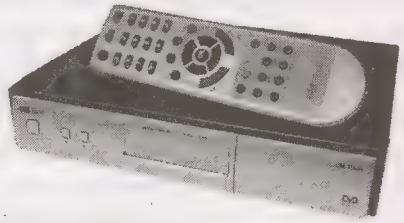
eMTech
**eM320PVR**




**Satellite Receiver with Dual Tuner and recording**
The eMTech em320 you can record one channel while watching another. IEEE1384 Firewire port allows fast transfers of recordings to your PC. Reinforced multimedia support for MP3s, Jukebox, VCD and Hundreds of games available via MSX Emulation. 80G HDD for up to 44 hours recording.
***$1048*** *inc GST with Irdeto 2.09 CI cam.*

eMTech
**eM150IR**

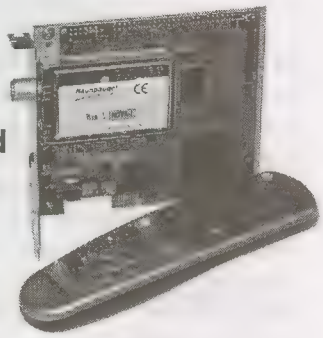
irdeto access



**Compact embedded Irdeto Receiver**
The eM150IR is a compact receiver with one embedded Irdeto card slot. Also has a new easy to use Onscreen Display (OSD)
***$279*** *inc GST.*

## TERRESTRIAL

Hauppauge
Nova-T
**Terrestrial PCI Card**



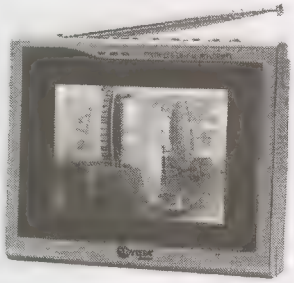
With the Hauppauge Nova-t Terrestrial PCI card you can watch and **record** SD and HD* television onto your computer, comes with infra red receiver and remote control.
***$199*** *inc GST.*

**** A Computer with a P4 2.4 GHz or higher CPU and a GeForce4 or equivalent or higher video card is required for HD viewing/recording. HD compatible software is available from the Hauppauge site: http://hauppauge.lightpath.net/de/nova-pci216.exe***

eMTech
**eM1150**

**Quality Digital Terrestrial Receiver**
The eMTech eM1150 is a high quality, simple to use standard definition digital terrestrial receiver.
Sensitive and reliable.
***$299*** *inc GST.*

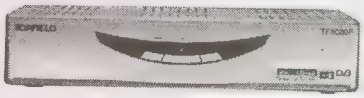
MIYOTA
**LCD TV screen**



Comes in 6" standard 4:3, & 7.5" 16:9 **widescreen** models. AV inputs, AC power pack, remote control and 12V lead supplied.
6" model: **$229** inc GST
7.5" model: **$299** inc GST

**Topfield TF3030F *Special offer***

Full featured free to air digital satellite receiver. Has two sets of RCA/AV outputs, no scarts or modulator.
***$165*** *inc GST, Delivery.*



Satwork updates

"Thank you for the favourable report on our Satwork ST3618 (SF#111, p. 10). I am pleased to update we have solved the duplicate channel loading as well as the software bug that limited it to 1,000 channel memory. I am not aware of any other designer/manufacturer who maintains a constantly updated approach to the STB software. We post the updates as they are received (www.dmsiusa.com/software.htm) and when software bugs are reported, I immediately forward them to our software engineer. He usually fixes the bugs and gives us new software in a couple of days. Of course this being a fluid technology, sometimes he creates new bugs! It is certainly a work in progress, which we do not try to hide or coverup. I don't think anyone else in this business has the stones to offer up software and then let the users point out what is needed.

"Regarding 'who was first' and 'which is best' - I have no desire to enter into a contest over this. Here are some facts, and my opinion as to what is happening here. When we brought in the first shipment of Coship blind search, 2 manufacturers bought samples from us. When the Satwork came in as a replacement with us for the Coship, 5 manufacturers bought samples, Pansat included. I believe low cost blind search capability is becoming a 'must have' for essentially all FTA receiver designers. And I expect from here on out we will see a constant stream of minor variations, 'improvements' some will claim, but in the end it will become a commodity just like the standard FTA receiver is today. It is too late to be the 'first one' so everyone now will try to be the 'better one' and the customers will decide for us all. Coship and Satwork will always be the first 'affordable' blind search receivers and I believe you have a grasp on 'the price' DMS and I have paid to start this revolution. "

Tim Heinrichs, DMS International, Acton, Ga (USA)

SA changes models

"Scientific Atlanta models D9223 and D9225 are in the process of being superseded by a single new model - the D9850. This is a 1RU (rack unit - 45mm height) commercial product with all of the features of most variants of the two models it replaces, and at a better price. The D9234 Business Receiver continues to be available although it too will be replaced with a newer model early in 2004. Also, the contact number for purchase of all SA receivers should be noted as we are now the Australian/New Zealand distributor: TVO is at 61-2-9281 4481."

John Martin, Television Oceania, Ultimo, NSW

C1 Reduction in power - PNG vertical?

"Reference SF#111 report (p. 2) that receive sites in PNG who began with strong C1 vertical signals on the NA beam have now found those signals to be back in the range of B3 (not usable). As I have kept a frequently updated log of my NSW signal levels from the day C1 began, I though it might be useful to redo the measurements based upon the PNG reports. If PNG is down because the power (EIRP) was turned down then I should see it here. If PNG somehow can be shut off by perhaps fine tuning the vertical side feed antenna on board the satellite, to move the on ground pattern by a few tenths of a degree, then either I will be the same or greater than before. It is the latter. With the 65cm reference dish, my NA levels have gone from 96% to 100% on the UEC. The NANZ beam, on the other hand, remains unchanged from July 28. On the NB beam (pay-TV), when the symbol rates were changed from the original 29.473 to 28.700, the signal quality rose slightly. Now on the NB I read 100% (previously 95%) and 100% is what I previously had from B3's high performance beam. There is no indication the change in quality on the NB is related to any movement in the footprint. As it appears only the NA beam seems to have moved, it is unlikely the satellite itself has been 'tilted' (thereby moving all transmit reflectors as well as the body of the satellite). This leaves the possibility, probability in fact, that the transmit antenna for the NA beam can be steered and/or the feed moved with relation to the reflector so as to 'trim the edges' of the pattern while simultaneously increasing the signal level (quality) in the centre of the beam. A wild card possibility - as Foxtel (Austar) will one day be routinely utilising both Hz and Vt sides of the satellite, it makes sense they would incorporate a mechanism to allow them to 'balance' the patterns and levels between the two polarities. In all of this, can we get an updated report from the SF reader in Hawaii who originally reported C1 availability there?"

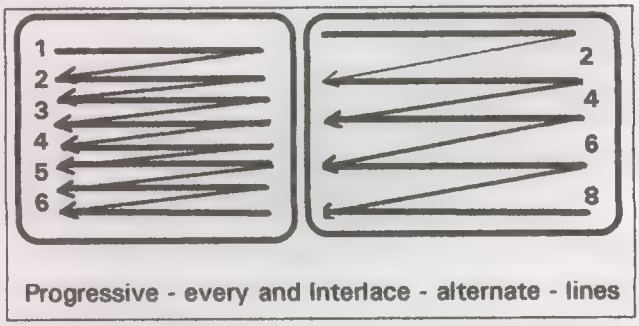
Al, NSW

Progressive scan?

"I notice that some of the DVD players now being advertised and in local shops output their video in progressive-scan, for TVs (or monitors) capable of non-interlaced pictures. Is it true that progressive scan would in fact produce better quality images on the screen than interlaced images? Question: Are their any IRDs available capable of progressive scan output?"

Fish, NSW

As we mention in our page 6-start report on TV via the web, at least one of the most advanced systems uses progressive scan and derives significant bandwidth benefits from that choice. Virtually all PC products uses progressive scan of the image; virtually all TV sets use interlaced scan.




Progressive - every and Interlace - alternate - lines

Interlace breaks the TV "frame" (one complete image) into two equal parts - the electron beam racing over the face of the display traces from left to right, skips a line, returns to the left (the "vertical blanking interval") and starts over left to right. Lines 2, 4, 6 and so on through 262 are first traced then the beam, now at the bottom of the image, is sent to the top where it starts repeating the process on lines 1, 3, 5 and so on through 263 (262.5 actually but we'll ignore that for now). When all even lines (2,4,6) are full and all odd lines (1,3,5) are full, you have a complete frame. And as there are (in NTSC - our example) 30 frames per second (fps), this "interlace" process takes 1/30th of a second. Progressive was originally developed for computer images, starts top left tracing line 1, then 2,3,4 and so on. Top to bottom, every line - no skips.

PC images have the technical ability to be "sharper" than interlace but this is totally dependent upon the software. When MPEG-2 was first debated, computer folks urged that it be only progressive; they lost to the lobbyists from the broadcast TV world. Ultimately, progressive will prevail - interlace is in the twilight of its useful life.

## PACIFIC ANTENNAS (2000) Ltd.

Brokers of new and used antennas.
All sizes / makes together with
associated fittings and equipment.

Your one stop source for antennas and satellite electronics for the ENTIRE Pacific region.

We now offer a full range of satellite equipment designed for your particular personal or professional requirements. Including: 2.4 to 13 metre antennas, feed horns, mounts, LNBs, digital and analogue receivers, geostationary and inclined orbit manual and automatic tracking systems, cable and fittings.

Most equipment available on short or long term leases. Hire Purchase (HP) also available.

PO Box 214, Silverdale, Auckland, NZ
Ph/Fax 64-9-426-2324; Mobile 0274 789 160
Email: pacant@clear.net.nz

## INSTALLING AURORA KITS?

Buy your kits from the people who have been solving television reception problems for over 40 years;
*useful technical advice available.*

The deal

- Optus Approved UEC Model 910 IRD packed with a 4 page out of area reception application
- Aurora card
- LNB
- 90cm dish (dish shipped totally enclosed in a wooden crate - pallet size)

**NEW** compact model. All for $548 plus GST and freight. Trade installers only, from

**RURAL ELECTRONIC PRODUCTS**
*"The better reception centre"*

313 Summer Street Orange NSW 2800
Phone (02) 6361 3636

## SATELLITE TV IS A GREAT HOBBY - Let's not forget that!

**Since 1976** we've been involved in satellite TV. A hobby in those early days, our interest led to establishment of a business in 1981 that has introduced thousands of people to the exciting world of satellite TV. We produced our first international satellite receiver kit in 1986, and the first DIY home satellite system in Australia back in the early days of 1990.

**Along the way** we have found that above all else, customer support is critical. If you look around the industry, you'll soon sort out those vendors who operate on a strictly commercial basis, and, those who really have your real hobby interests at heart.

**That's why we have made it our priority** to give you all of the information to help you make your hobby a success. So if you are contemplating Satellite TV as a hobby, give us a call; we'll help get you off on the best track. Who knows - you might even become a part of this growing industry!! You can count on our decades of experience to provide you with the best "right" solution at an affordable price.

## AV-COMM Pty Ltd

P.O. Box 225 Brookvale NSW 2100 AUSTRALIA
Tel 61-2-9939 4377 Fax 61-2-9939 4376 or, visit our website at
**http://www.avcomm.com.au**
**Email cgarry@avcomm.com.au**
You are welcome to also visit our showroom (24/9 Powell's Rd, Brookvale NSW), join our E-mail newsletter service (addme@avcomm.com.au)
(Av-Comm Pty Ltd ACN 004 174 478)

**Optus C1 and B3 loading changes - Mid November to publication date (December 5)**

**Significant changes in the operational characteristics for two of the three Optus/SingTel satellites** have occurred since SF#111. We update the status of both satellites here (and continued on page 28). This is a work in progress and by dateline here are changes that have occurred in the past 30 days.

**C1/156E:**

**16 November**: Transponder T9/12.647V (Sr 30.000, 2/3) switched off November 15; apparently now B3 T6/12.594V, Sr 30.000, 2/3; no loading table while on C1. T20/12.688H (Sr 29.473, 3/4) has but one remaining channel labelled 'X50;' a test card. T6/12.527V Aurora (Sr 30.000, 3/4). Channel 31, Imparja's 'Info Ch 31' note carrying Star Sports Asia directly from As3S. Normal Aurora cards played it (intermittent service, switches between CA and FTA). Some problems - NTSC to PAL conversion often not done correctly - vertical blanking bar visible at base of image pushing top of picture off screen.

**21 November**: Unknown teletext-data PIDs removed from NGEO and SHOW; MOV1 T17/12.558H (27.800, 3/4) has/had (new) teletext PID 1076; ESPN T15/12.478 (27.800, 3/4) added teletext data stream PID 1096. History Channel T17/12.558H (Sr 27.800, 3/4) added extra sound track - possibly for use by NZ Sky TV which is adding this service. Video and PCR PIDs 1101, audio channels 1102, 1103. Extra sound channel running only at data-rate of 0.057 Mbit/s while main audio track runs at 0.18 Mbit/s - may be data rather than actual audio such as a timing circuit to tell NZ Sky when to switch away for local insertions while Australia is running promotions. The EXPO Channel T19/12.638H (27.800, 3/4) running FTA VPID 1031, APID 1032, PCR 1031. The data rate is a constant 3 Mbit/s which may be a terrible waste of bandwidth because the video quality is very poor looking as if they are tapes that have been played far too many times.

**24 November**: T20/12.688H (29.473, 3/4) is again running after being powered down for several days. It is still carrying a single video channel, labelled, "X50 No broadcast on this channel" There is a constant video data rate of 4 Mbit/s, test pattern only.

**29 November**: Optus has been "hiding" some PIDs and activating others. The PID that previously loaded as the second soundtrack on History Channel is now "hidden" but continues to carry data (audio PID 1103). The teletext PIDs on AUSTAR ABC and SBS TV channels, which both carry subtitles, are now hidden (possibly because AUSTAR's IRDs will not work with the live subtitling format - Nokia with DVB2000 will, however). Optus this date allocated teletext PIDs on 16 TV channels but no data is currently running on them.

**30 November**: At midnight (according to the EPG) the channel which was previously FOXTEL's "Coming Events, became Animal Planet.

**1 December**: Prior to this weekend, Austar and Foxtel had been advising customers to "leave receivers powered on Friday, Saturday and Sunday." Here is what has transpired. T14/12.438H (Sr 29.473, 3/4), the "home" channel, now loads only one service. This is FTA, loading as C1T14, with a scrolling message as follows:

"IMPORTANT NOTICE: Austar and Foxtel are upgrading your satellite TV service. We apologise for this temporary disruption. FOR FOXTEL CUSTOMERS ONLY: 1. Remove your FOXTEL smartcard (located in your set top box) & write down the 11 digital smartcard number. 2. Reinsert your FOXTEL smartcard. 3. Call 1800 007 663 to reactivate your service. FOR AUSTAR TV CUSTOMERS ONLY: 1. Press the reset button on the front panel of your AUSTAR decoder box or switch it off at the power point on the wall. Wait 2 minutes before switching it back on. 2. If your service has still not been restored, repeat step 1. 3. If you're still unable to view your AUSTAR service, please complete the following: I: Remove the AUSTAR smartcard from the front slot of your decoder box and write down the 11 digit number, which is found on its reverse, above the bar code. II: Reinsert your AUSTAR smartcard. III. Call 1300 732 255 with your smartcard number ready, to reactivate your service. ALL SATELLITE SUBSCRIBERS should ensure: your smartcard is kept in the decoder box. • your decoder box is plugged in and switched on at all times. If you do not have a FOXTEL or AUSTAR smartcard please call: FOXTEL on 131 999 or AUSTAR on 132 342."

It appears AUSTAR but not FOXTEL receivers have had a software upgrade, with a change done to the 'home' transponder settings. The transponder changes as of 1 December are as follows:

T11/12.278H (Sr 30.000, 3/4). NIT switched off; PAT still exists, no SDT entries. It indicates 35 PMTs but even Nokia will not load them. Checking PMTs using older (recorded) PID data indicates no data streams running. Strange department: A UEC 642 will load channels on T11/12.278 but it uses data from T17 to do so - first instance of UEC doing something fully loaded Nokia will not do! Humax, on other hand, still loads all these channels but not in correct order/sequence (labels them "unknown")

T12/12.358H (Sr27.800, 3/4). Has NIT of 7 transponders; otherwise normal.

T13/12.398H (Sr 27.800, 3/4). NIT of 7 transponders; C.E. relabelled as "AP" - Animal Planet on Foxtel channel 15.

T14/12.438H (Sr27.800, 3/4) Has NIT of only itself; Loads single channel (FTA) noted above with message. Network label for this channel now "OPTUS."

(continues - page 28 here)

# SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 December 2003

| Bird | Service | RF/IF &Polarity | # Program Channels | FEC | Msym | Receivers and Errata |
|---|---|---|---|---|---|---|
| Thcm3/78.5 | SkyChAust | 3695/1455H | up to 3 | 3/4 | 5(.000) | CA (#1, 3); FTA audio #2 (dm) |
| | Indiavision | 3685/1465H | 1 | 3/4 | 6(.830) | Tests June 2003, not permanent |
| | **Korean Central** | 3665/1485H | 1 | 2/3 | 3(.367) | Global footprint, changes 02/03 |
| | **TARBS ME mux** | 3640/1510H | 12TV, 12 radio | 2/3 | 28(.066) | CA + 2 FTA(A1TV, IRB3)( |
| | **Ch Nepal** | 3626/1524V | 1 | 3/4 | 15(.556) | New 03/03, FTA |
| | **Mahar mux** | 3600/1550H | 11TV, 1 rad | 3/4 | 26(.667) | Thai + Indian services; FTA |
| | **SE asia Mux** | 3569/1581H | 2+ TV | 3/4 | 12(.500) | MRTV3, MRTV (DM) |
| | **RR Sat mux** | 3551/1600H | 8TV,10 radio | 3/4 | 13(.333) | 3TV, 5radio currently in use |
| | **JAIN TV** | 3538/1612V | 1TV | 3/4 | 3(.300) | PIDs 4132/4133 |
| | **PTV1 +** | 3521/1629V | 1TV, 1 radio | 3/4 | 3(.333) | frequency change |
| | TARBS | 3520/1630H | 12TV, 12 radio | 3/4 | 28(.066) | Feeds to TARBS Australia and PAS-8 |
| | **TVK Cambodia** | 3448/1702H | 1TV | 1/2 | 6(.312) | **FTA** |
| | **TARBS/Th5** | 3480/1670H | 12 TV+radio | 2/3 | 26(.667) | **3FTA** TV5, VTV4, ATN Bangla |
| | KCTV/Korea | 3424/1726H | 1TV | 3/4 | 3(.366) | Not 24 hour |
| | **Thai Global** | 3425/1725V | up to 7? | 2/3 | 27(.500) | FTA (reaches SE Australia) |
| InSat 2E/83 | **ETV mux** | 4005/1145V | 6+ TV | 3/4 | 27(.000) | Several ETV now here, wide beam |
| | **Hyd Dig 2E** | 3910/1240V | 1 | 3/4 | 5(.000) | SCPC, OK E. Aust wide beam |
| | **Kairali TV** | 3699/1451V | 1 | 3/4 | 3(.184) | SCPC, OK E. Aust wide beam |
| | **Indian mux** | 3643/1507V | 3 | 3/4 | 19(.531) | corrections 12/02 |
| | **ETV Mux#2** | 3485//1665V | 4+TV | 3/4 | 27(.000) | Several new ETV here, Asia beam |
| | **Sky Bangla** | 3430/1720V | 1TV | 3/4 | 6(.000) | New - November 2002 |
| NSS6/95E | Test MUX | 12.688V | 7+ TV | 3/4 | 28(.066) | PowerVu, may be NE Asia beam, tests |
| | Test Free-XTV | 12.631V | 1TV | 2/3 | 2(.441) | Possibly India-only beam |
| | **Test MUX** | 12.593V | 8TV + radio | 3/4 | 21(.000) | Testing - many European stations, Australia beam |
| As2/100.5E | **Shandong TV** | 4070/1080H | 1TV | 3/4 | 6(.811) | New - October 2002 |
| | **Euro Bouqt** | 4000/1150H | 6TV, 2 r | 3/4 | 28(.125) | FTA TV + radio |
| | **Sichuan TV** | 3946/1204H | 1TV + radio | 3/4 | 4(.420) | New April 2003 |
| | Reuters News | 3905/1245H | 1TV | 3/4 | 4(.000) | Was 3923H; sometimes **FTA** |
| | **WorldNet** | 3880/1270H | 4+/28radio | 1/2 | 20(.400) | FTA; multiple audio services |
| | **Hubei/HBT** | 3854/1296H | 1 | 3/4 | 4(.418) | FTA SCPC, teletext, 2 radio |
| | **Hunan/SRT** | 3847/1303H | 1 | 3/4 | 4(.418) | FTA SCPC, teletext |
| | **Guan./GDT** | 3840/1310H | 1 | 3/4 | 4(.418) | FTA SCPC, radio APID 81 |
| | **In. Mongolia** | 3828/1322H | 2 | 3/4 | 8(.397) | FTA: #1 Mongolian, #2 Mandarin |
| | APTN Asia | 3799/1351H | 1 | 3/4 | 5(.632) | Sometimes **FTA**, also 3895Vt |
| | Reuters/Sing | 3775/1375H | 1 | 3/4 | 5(.631) | **FTA** & CA |
| | **Liaonin/Svc2** | 3734/1416H | 1 | 3/4 | 4(.418) | FTA SCPC, radio APID 256 |
| | **Jiangx/JXT** | 3727/1423H | 1 | 3/4 | 4(.418) | FTA SCPC, teletext, radio APID 81 |
| | **Fujian/SET** | 3720/1430H | 1 | 3/4 | 4(.418) | FTA SCPC, + radio APID 80 |
| | **QinghaiTV** | 3713/1437H | 1 | 3/4 | 4(.418) | FTA SCPC, + 2radio (APID 80) |
| | **Henan/Main** | 3706/1444H | 1 | 3/4 | 4(.418) | FTA SCPC, + radio |
| | Egypt/Nilesat | 3640/1510H | 7+, radio | 3/4 | 27(.850) | Thru TARBS Aust, occ **FTA** |
| As2/100.5E | **Macau MUX** | 4148/1002V | 5TV | 3/4 | 11(.850) | 5 chs TV, FTA, some tests |
| | **Feeds** | 4086/1064V | 1 | 3/4 | 5(.632) | FTA SCPC feeds |
| | **Dubai MUX** | 4020/11430V | 4+, radio | 3/4 | 27(.500) | FTA , sometimes includes sport |
| | **Jilin Sat TV** | 3875/1275V | 1 | 3/4 | 4(.418) | FTA SCPC, + radio |
| | **Shanghai BN** | 3846/1304V | 1 | 3/4 | 4(.800) | V1110, A1211 + 2 radio ; FTA Jan 2003 |
| | **HeiLongJian** | 3834/1316V | 1 | 3/4 | 4(.418) | FTA SCPC |
| | **JSTV** | 3827/1323V | 1 | 3/4 | 4(.418) | FTA SCPC, + radio |
| | **Anhui TV** | 3820/1330V | 1 | 3/4 | 4(.418) | FTA SCPC + radio |
| | **ShaanxiQQ** | 3813/1337V | 1 | 3/4 | 4(.418) | FTA SCPC, radio APID 81 |
| | **Guan/GXTV** | 3806/1344V | 1 | 3/4 | 4(.418) | FTA SCPC, radio APID 257 |
| | **Fashion TV** | 3795/1355V | 1 | 3/4 | 2(.626) | FTA as of May 1, 2003 |
| | **3-ch miniMUX** | 3752/1398V | up to 3 | 3/4 | 5(.640) | Sun-TV, Surya TV, KTV (FTA) |
| | **Saudi TV1** | 3660/1490V | 7+/tests | 3/4 | 27(.500) | FTA MCPC, Yemen, MBC EUROsport tests |
| As3S/105.5E | Telstra I-Net | 12.596V | no TV | 5/6 | 30(.000) | Signal useful for dish testing - no TV |
| | **RR Mux** | 3669/1481V | up to 5 TV | 3/4 | 13(.333) | Tests (Dec 2003), not fulltime |
| | Zee bouquet | 3700/1450V | 10TV | 3/4 | 27(.500) | Mediaguard + Conax CA, 2 occ FTA |
| | **Ch News Asia** | 3706/1444H | 1TV (+) | 3/4 | 6(.000) | New September 2003, English + V1160, A1120 |
| | **Arirang TV** | 3755/1395V | 1 | 7/8 | 4(.418) | FTA SCPC, New PIDs V3601, A3606 June 2003 |
| | **Now TV +** | 3760/1390H | up to 8TV | 7/8 | 26(.000) | CA + NOW, B'berg, Indus Music, MTA FTA |
| | Star TV | 3780/1370V | 7(+)TV | 3/4 | 28(.100) | NDS CA (Pace DVS211, Zenith) |
| | Star TV | 3840/1310H | 7(+) TV | 7/8 | 26(.850) | NDS CA (Pace DVS211, Zenith) |
| | Star TV | 3860/1290V | 5(+)TV | 3/4 | 27(500) | NDS CA (Pace DVS211, Zenith) |
| | Star TV | 3880/1270H | 20(+)TV | 7/8 | 26(.850) | NDS CA (Pace DV211, Zenith) In transition 06-2003 |
| | **Star TV** | 3920/1230H | 4+ TV | 7/8 | 26(.850) | Star Sports Asia (+), FTA NTSC, V512, A640 English |
| | Star TV | 3940/1210V | 6(+)TV | 7/8 | 26(.850) | NDS CA as above, may NOT be operational |
| | CNNI | 3960/1190H | 8(+)TV | 3/4 | 27(500) | PowVu CA, new SR Apr 29 |
| | StarTV | 3980/1170V | 6+TV | 3/4 | 28(.100) | NDS CA, Star News India **FTA** VPID 514, APID 648 |
| | **Star TV** | 4000/1150H | 8(+)TV | 7/8 | 26(.850) | NDS CA w/ **4(Chinese) FTA** |
| | **Sahara digital** | 4020/1130V | 8TV | 3/4 | 27(.250) | New Sr September |
| | **Pakistani TV** | 4091/1059V | 4TV, 1 radio | 3/4 | 13(.333) | new Sr, channels Nov 2003 |
| | **Sun TV** | 4095/1055H | 1 | 3/4 | 5(.554) | "History Channel" testing SCPC |
| | TVB Mux | 4010/1040H | 3 | 3/4 | 11(.230) | **MATV Chinese movies FTA**; + CA |
| | **CCTV bqt** | 4129/1021H | 4(+) TV | 3/4 | 13(.240) | moved from 4115 |
| | Zee Bqt #2 | 4140/1010V | 8(+) TV | 3/4 | 27(.500) | Mediaguard (SECA) CA |
| Cak1/107.5 | Indovision (S-band) | 2.535, 2.565, 2.595, 2.625, 2655 | 33(+) TV | 7/8 | 20(.000) | NDS CA using RCA/Thomson, Pace IRDs; **2.535 has 2 FTA** |
| T'Kom/108E | **IndoBqt** | 3460/1690H | up to 6 | 3/4 | 28(.000) | also 3586H/17.500, 3496H/19.615 |
| C2M/113E | **TPI** | 4185/965V | 1 | 3/4 | 6(.700) | FTA SCPA, NT/NC only |
| | **TVE Asia-Africa** | 4160/990H | 1 | 3/4 | 5(.632) | New August 2003 |
| | **Anteve** | 4144/1006V | 1 | 3/4 | 6(.510) | change from 4055V; FTA SCPC |
| | Indo Mux | 4080/1070H | 5+ TV | 7/8 | 28(.125) | Global TV - erratic new FEC 06/03 |
| | Indostar | 4074/1076V | 1 | 3/4 | 6(.500) | FTA (new 06-03); V2201, A2202 |
| | SCTV | 4048/1102V | 1 | 3/4 | 6(.618) | FTA SCPC, NT, New Caledonia only |
| | Indonesian Mux | 4000/1250H | 6+ TV | 3/4 | 26(.085) | undtable platform - not always there |
| | Satelindo | 3935/1215H | 1 | 3/4 | 6(.700) | test card - only - reported |
| | Bali TV | 3926/1224H | 1 | 3/4 | 4(.208) | FTA, may not be active full time |
| | Indo MUX | 3880/1270H | 3+ TV | 7/8 | 28(.121) | FTA, Sr change 01/03, erratic |

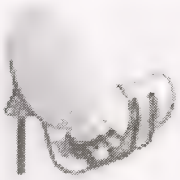
Copyright 2003: SatFACTS, PO Box 330, Mangonui, New Zealand (e-mail Skyking@clear.net.nz)

| Bird | Service | RF/IF & Polarity | # Program Channels | FEC | Msym |
|---|---|---|---|---|---|
| | **GlobalMUX** | 3760/1390H | up to 11 TV? | 7/8 | 28(.121) |
| | **Brunei/Sing** | 3733/1417H | 1TV | 3/4 | 6(.000) |
| | **TBN/Trinity** | 3727/1423H | 1 TV | 3/4 | 3(.000) |
| | **RCTI** | 3473/1677H | 2 | 3/4 | 8(.000) |
| As4/122E | **Chinese mux** | 3881/1269H | 8 or more | 3/4 | 26(.850) |
| Ic3/128 | Miracle Net | 3996/1154V | 3 up to 6 | 5/6 | 22(.000) |
| | Asian bqt | 3960/1190V | up to 8 | 7/8 | 30(.000) |
| Ic2A 154 | Cnet | 3880/1270V | up to 12 | 3/4 | 30(.000) |
| | **BYU tests** | 3915 1245V | 2 | 3/4 | 3(.703) |
| MeaSs2 | New Mux | 12.532H | 17 | 3/4 | 41(.500) |
| | Astro Mux | 11.602H | up to 17TV | 3/4 | 41(.500) |
| | **VTV MUX** | 11.522V | 3 TV | 3/4 | 9(766) |
| B3/152 | Optus tests | 12 407V | 4+ TV, 4+ radio | 2/3 | 30(.000) |
| | **Globecast tests** | 12 525V | 8+ TV radio | 2/3 | 30(.000) |
| | **Globecast tests** | 12.657V | 5+ TV | 2/3 | 30(.000) |
| | **Globecast tests** | 12 720V | 8+ TV, radio | 2/3 | 30(.000) |
| C1/156 | Globecast | 12.367V/T2 | 13TV, 12radio | 2/3 | 30(.000) |
| | Aurora | 12 407V/T3 | 13TV, 12 radio | 2/3 | 30(.000) |
| | Aurora | 12.527V/T6 | 11TV, 19 radio | 3/4 | 30(.000) |
| | Aurora | 12.567/T7 | 2+ radio (only) | 2/3 | 30(.000) |
| | (tests) | 12.606V/T8 | TVSN FTA | 3/4 | 27(.800) |
| | Aurora | 12.720V/T10 | 10TV, 19 radio | 3/4 | 30(.000) |
| | Austar | 12 278H/T11 | 02-12 - changes | 3/4 | 30(.000) |
| | Optus/Foxtel | 12.358H/T12 | 11TV | 3/4 | 27(.800) |
| | Optus/Foxtel | 12.398H/T13 | 10 TV | 3/4 | 27(.800) |
| | Austar/Foxtl | 12 438H/T14 | one info channelFTA | 3/4 | 27(.800) |
| | Optus/Foxtel | 12 478H/T15 | 9 TV | 3/4 | 27(.800) |
| | Austar/Foxtl | 12 518H/T16 | TVSN only | 3/4 | 27(.800) |
| | Austar/Foxtl | 12 558H/T17 | 11TV, 24 radio | 3/4 | 27(.800) |
| | Austar/Foxtl | 12 598H/T18 | 11TV | 3/4 | 27(.800) |
| | Optus/Foxtel | 12.638H/T19 | 8TV, 24 radio | 3/4 | 27(.800) |
| | (tests) | 12 688H/T20 | 1TV | 3/4 | 29(.473) |
| B1 160 | **ABC NT fd** | 12 258V | 1TV, 3 radio | 3/4 | 5(.026) |
| | Occ. feeds | 12 380H | 1 TV - * | 3/4 | 6(.111) |
| | Occ. feeds | 12 384V | 1 TV - * | 3/4 | 6(.111) |
| | **Net 7 service** | 12.397H | 1 | 3/4 | 7(.200) |
| | **Central 7** | 12.354H | 1TV + 1 radio | 3/4 | 3(.688) (*) |
| | **Imparja mx** | 12 379H | 2TV 8 radio | 3/4 | 5(.424) |
| | **7 digital feeds** | 12 397H | 1TV | 3/4 | 7(.200) |
| | **Feeds to NZ** | 12 411V | 1 TV | 3/4 | 6(.111) |
| | **SBS Mux** | 12.420H | 3+ TV, 2+ radio | 5/6 | 12(.600) |
| | **TVNZ DTH** | 12.456V | 5+TV | 3/4 | 22(.500) |
| | **Nine Net** | 12.512H | 1 TV typ. | 3/4 | 5(.632) |
| | Sky NZ | 12 519/546V | 7TV/7TV | 3/4 | 22(.500) |
| | Sky NZ | 12 581.608V | 6TV/6TV | 3/4 | 22(.500) |
| | Sky NZ | 12.644/671V | 9TV | 3/4 | 22(.500) |
| | **ABC HDTV** | 12.603H | 5TV | 7/8 | 14(.300) |
| | Sky NZ | 12.707/733V | 8+TV | 3/4 | 22(.500) |
| | **Mix 106.3** | 12.574H | 1 radio + data | 3/4 | 1(.851) |
| P8 166 | TARBS3 | 12.326H | 13TV + radio | 3/4 | 28(.066) |
| | TARBS | 12.526H | 13TV + radio | 3/4 | 28(.066) |
| | TARBS2 | 12 606H | 13TV + radio | 3/4 | 28(.066) |
| | TARBS5 | 12.646H | testing | 3/4 | 28(.066) |
| | TARBS4 | 12 726H | 13TV + radio | 3/4 | 28(.066) |
| | JEDI/TVB | 12.686H | 11+ TV | 3/4 | 28(.126) |
| | **ABC A-P** | 4180.970H | 2TV, 2 radio | 3/4 | 27(.500) |
| | Disney Pac | 4140/1010H | typ 6 TV | 5/6 | 28(.125) |
| | NHK Joho | 4060/1090H | 7TV, 1 radio | 3/4 | 26(.470) |
| | FOX Mux | 4040/1110V | up to 5TV | 7/8 | 26(.470) |
| | **NET +** | 4121/1029V | 1 TV | 3/4 | 4(774) |
| | ESPN USA | 4020/1130H | 8+TV, data | 3/4 | 26(.470) |
| | Discovery | 3980/1170H | 8 typ. | 3/4 | 27(.690) |
| | CalBqt/Pas8 | 3940/1210H | up to 3+ FTA | 7/8 | 27(.690) |
| | CNBC HK | 3900/1250H | up to 7TV | 3/4 | 27(.500) |
| | FilipinoMUX | 3880/1270V | up to 8TV+radio | 5/6 | 28(.694) |
| | **TaiwanBqt** | 3860/1290H | 12TV + 30 r | 5/6 | 28(.000) |
| | **CCTV Mux** | 3829/1321H | up to 4 + 1 radio | 3/4 | 13(.240) |
| | TVBS-N | 3836/1314V | **1FTA**, 4+ CA | 3/4 | 22(.000) |
| | EMTV PNG | 3808/1342V | 1 + 2 radio | 3/4 | 5(.632) |
| | CNNI | 3780/1370H | 3, up to 5 TV | 3/4 | 25(.000) |
| | Discovery Asia | 3764/1386V | Up to 6 TV | 3/4 | 19(.850) |
| | MTV | 3740.1410H | 8 | 2/3 | 27(.500) |
| | **ABS-CBN APT** | 3712/1438V | 1 | 3/4 | 3(.712) |
| P2 169E | Off-shore rigs | 12.281V | 2+ TV, radio | 2/3 | 27(.500) |
| | WA PowVu | 12.637(.5)V | 4TV, 8 radio | 1/2 | 18(.500) |
| | **NBN-TV** | 4126.1024V | 1TV | 3/4 | 3(.075) |
| | TARBS | 4090V/1060V | 9TV + radio | 3/4 | 21(.000) |
| | **Feeds** | 4037/1113H | 1+ TV | 2/3 | 6(.620) |
| | **Feeds** | 4027/1123H | 1+TV | 2/3 | 6(.620) |
| | **Feeds** | 4023/1127V | 1 +TV | 3/4 | 13(.328) |
| | **Feeds** | 3966/1184V | 1 | 2/3 | 6(.620) |
| | **Feeds** | 3957/1193V | 1 | 2/3 | 6(.620) |
| | **Feeds** | 3929/1221V | 1 | 3/4 | 10(.850) |
| | **Feeds** | 3912/1238V | 1 | 2/3 | 6(.620) |
| | **Feeds** | 3898/1252V | 1 | 2/3 | 12(.000) |
| | Middle East | 3836.1314V | 4 typ | 3/4 | 13(.331) |
| | **Feeds** | 3803/1347V | 1 | 3/4 | 6(.000) |
| | PAS/**BBC** mux | 3744/1406V | 3 | 3/4 | 21(.500) |

| Receivers and Errata |
|---|
| test cards (11), new Sr/FEC 01-03 |
| FTA share time. Brunei 23 hrs. Sing 1 hr |
| New PIDs 10-03, reload |
| FTA SCPC; Australia, New Caledonia, some English |
| First TV mux to appear this new bird |
| PowerVu: some FTA (Ch. 1 & 3) |
| CA & **FTA** NTSC: Japan, Taiwan |
| Cnet (Taiwan) tests; not full time |
| Erratic service, very strong NZ and Australia |
| New Sept 2002. unknown source |
| Aust East beam - **3 FTA** + 14 CA |
| WA only? Skew path, intended Asia |
| now differs from 12 407 C1, **tune ch FTA** |
| C1 12 367V services moving here Nov Dec 2003 |
| part of Globecast expansion underway |
| part of Globecast expansion underway |
| Content chs moving to B3, "watch this space!" |
| Aust, NZ 90 cm |
| Australia NA only (leakage to Norfolk, New Cal) |
| Aust, NZ 90 cm |
| Tests, unique NIT to this TR |
| Australia NA only (leakage to Norfolk, New Cal) |
| 02-12/late-NIT returned, loads same as bqt |
| CA, subscriptions available Australia, Norfolk |
| CA, subscriptions available Australia, Norfolk |
| 02-12: probable temporary info ch (p. 22) |
| CA, subscriptions available AUstralia, Norfolk |
| 02-12 probable temporary loading |
| "Home"CA, subscription available Australia, Nrflk |
| CA, subscription available Australia, Norfolk |
| Tests (CA) |
| Tests (Clt20), unique NIT, see detail p 28 |
| Svc off Dec 1-4, now back (5th) Future unknown |
| * - plus 12 451H, 12 460H |
| * - plus 12 293V, 12 402V, 12 411V |
| Full schedule less commercials - links |
| V1280, A1281, occ 2nd channel (* Sr varies) |
| PIDs vary, also try 12 360, 12 370 |
| occ digital feeds, typ fta |
| Often NTSC, USA-Australia-NZ |
| Also 12 420H same params, SBS HDTV + w-s |
| FTA 4 channels (TVNZ x 4); + **RWC** here |
| testing digital feeds; Sr may vary |
| NDS CA, subscription available NZ |
| NDS CA, subscription available NZ |
| NDS CA, subscription available NZ |
| also 12 626, 643, 670, 688, & 706H |
| NDS CA, subscriptions available NZ |
| Radio SCPC is "cover" for high speed data |
| TPG/EurodecMDS CA, occ. FTA |
| TPG /Eurodec MDSCA, **1 radio FTA** |
| TPG/Eurodec MDS CA |
| TPG/Eurodec MDS CA; **2 TV FTA** |
| TPG/Eurdec MDS CA |
| June 2002-Irdeto-2 CA |
| Dateline west; east PAS2, 3901 |
| PowVu CA |
| PowVu CA & **FTA**, subscription available |
| was PAS-2, previously 3992Vt |
| NET25 + FTA; new PIDS April; reload |
| PowVu CA; ch 11 DCP-CCP bootload, new FEC |
| PowVu/CA (some audio **FTA**) |
| PowVu CA & **FTA (EWTN +)** |
| NDS CA (6 channels), one testcard FTA |
| **Myx FTA** V1960, A1920 + radio FTA |
| Mixed **FTA** & CA, Taiwan Hallmark, STC |
| PowVu FTA, replaces PAS-2 svc |
| Difficult because of CCTV cross pole |
| was As2, PowVu CA |
| PowerVu |
| PowerVu, Asian MUX, new parameters Nov '03 |
| # 8 **MTV China FTA V289, A290);** rest CA |
| 24/7 English track 2 news; V4096, A4099 11-03 |
| PowVu CA, WIN, ABC NT |
| PowVu CA, WA only - D9234 |
| 3m up (NZ), 1 8m up Australia |
| Occ FTA (Chile +); BIG power reduction Nov. |
| Sporting feeds (occassional) |
| Sporting feeds from USA (occassional) |
| feeds to (USA) pay-TV |
| PowVu (FTA) occ feeds |
| PowVu (FTA) occ. feeds |
| PowVu (FTA) occ sport feeds |
| PowVu(FTA) occ. feeds |
| PowVu (FTA) occ. feeds |
| **Irdeto 2 CA - subscriptions avail; Strong Tech** |
| PowVu (FTA) occ sport feeds |
| **BBC, test card FTA**, others nominally CA |

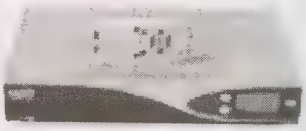
# SATWORLD

NOKIA eM TOPFIELD HUMAX



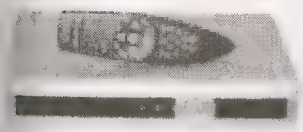
Humax IR ACE S

eMTech 200

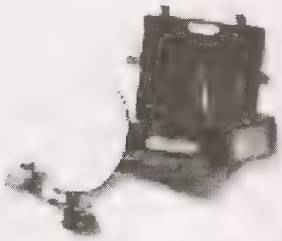


Dreambox 7000s

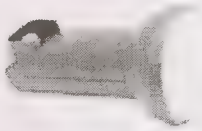
Strong 4800 II



Topfield 5000 PVR



Portable Dish



Grundig LNB

Gutter Mounts

**PUBLIC NOTICE! New Showroom /Warehouse Opening Soon!**

**www.satworld.com.au**
**ph: (03) 9773 9270 / sales@satworld.com.au**

**SHOP ONLINE AT OUR NEW WEBSITE!!! SHOP ONLINE AT OUR NEW WEBSITE!!!**

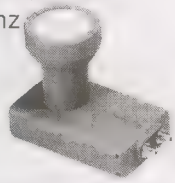
---

# MELBOURNE SATELLITES

Established 1992
ACN: 065 270 733
ABN: 51 477 349 864

Dual Output Ku-Band LNBF
Suit Optus 11.3Ghz
Run 2 Receivers
H/V on Both Ports

*Cat# LK-ZINOSDu*



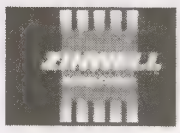
JONSA

HUMAX

ACER

Get your **IRCI-5400z, IR-5410z & F1-Ace** HERE

Norsat



**C-Band LNBF**
with Scalar Ring

*Full Range of Hardware & Accessories*
*Stockest of most Popular Brands*
*Intersate Inquiries Welcome*
*Freight Deliveries Available to Most Areas*

## Please Phone, Fax or Email for SATalogue and Pricelist.

MELBOURNE SATELLITES Pty Ltd
84 Bayfield Road East
P.O. Box 901
Bayswater VIC 3153
Phone: 03 9738 0888
Facsimile: 03 9729 8276

sales@melbournesatellites.com.au
www.melbournesatellites.com.au

| Bird | Service | RF/IF & Polarity | # Program Channels | FEC | Msym |
|---|---|---|---|---|---|
| (PAS2 169E) | Adventists.tv | 4040 1010H | 1 | 2/3 | 5(.900) |
| | Feeds | 3868/1182H | 1 | 2/3 | 6(.620) |
| | Feeds | 3939/1211H | 2 (typ NTSC) | 2/3 | 6(.620)7(.498) |
| | Cal PowVu | 3901 1249H | up to 8 | 3/4 | 30(.800) |
| | HK bouquet | 3850/1300H | up to 8 | 2/3 | 24(900) |
| | occ feeds | 3776/1374H | 1 typ | 3/4 | 5(.560) |
| | Korean Bqt | 3771/1379H | 1 | 3/4 | 9(.041) |
| I804/176E | iPSTAR | 12.619H | 1 | 2/3 | 25(.220) |
| | Tests-NZ beam | 12.646H | 1 | 3/4 | 22(.418) |
| | RFO Poly | 4027/1123R | 1TV | 3/4 | 4(.566) |
| I701/180E | TNTV | 11 060&11.514 | 9 | 3/4 | 30(.000) |
| | Canal+Sat | 11 610H | 16TV, 1 radio | 3/4 | 30(.000) |
| | TVNZ | 4195/955RHC | 1 | 3/4 | 5(.632) |
| | TVNZ/BBC | 4186/964RHC | 1 | 3/4 | 5(.632) |
| | TVNZ | 4178/972RHC | 1 | 3/4 | 5(.632) |
| | AFRTS DTS | 4175/975L | 3 TV, 3 radio | 2/3 | 3(680) |
| | TVNZ/Aptn | 4170/980RHC | 1 | 3/4 | 5(.632) |
| | TVNZ feeds | 4161/989RHC | 1 | 3/4 | 5(.632) |
| | RFO-Canal+ | 4086/1064L | 4TV, radio | 5/6 | 12(.041)) |
| | TVNZ/feeds | 4052/1098RHC | 1 | 3/4 | 5(.632) |
| | TVNZ feeds | 4044/1106R | 1 | 3/4 | 5(.632) |
| | NZ Prime TV | 4024/1126L | 1 | 2/3 | 6(.876) |
| | NBC to 7 Oz | 3960/1190R | 1 | 7/8 | 6(447) |
| | WorldNet | 3886/1264R | 1TV, 37 radio | 3/4 | 25(.000) |
| | Ioarana | 3772/1378L | 1 | 3/4 | 4(.566) |
| | TVNZ | 3846/1304R | 1 | 3/4 | 5(.632) |
| | NBA (Barker) Ch | 3803/1347R | 1 | 3/4 | 6(.111) |
| | 10 Australia | 37691381R | 4 | 7/8 | 20(.000) |
| | USA feeds | 3749/1401R | 4? | ? | 26(400) |

| Receivers and Errata |
|---|
| New December 2003; 24/7 "Hope Chs." |
| FTA (occ sport); also try 3863,Sr6.100 |
| FTA-typ NTSC-occ sport, live Shuttle |
| PowVu CA + FTA (BBC gone ) |
| was 4148Vt; some FTA |
| occ feeds, typ FTA; also Sr 5.600 |
| Korean MUX, reload 02/03 |
| Tests, late May start; also 12.646H |
| Testing possible data links; June 2003 |
| SE spot beam; was 4027LHC |
| east spot, 10TV + r each, vertical pol. |
| 1+ FTA, MediaGd "2", + 10.975 weaker |
| DMV/NTL early vers., occ feds, typ ca |
| DMV/NTL early vers. occ feds, typ ca |
| DMV/NTL early vers., occ feds, typ ca |
| DTS Direct to Sailors; audio previously FTA - no more |
| DMV/NTL early vers occ feds, typ ca |
| DMV/NTL early vers., occ feds, typ ca |
| east hemi 20.5 dBw +; new Sr |
| DMV/NTL early vers ,occ feeds, typ ca |
| SCPC, mixed CA and FTA feeds |
| PowVu CA; Auckland net feeds |
| CA, Leitch encoded |
| New Feb 2002, very strong NZ, Pacific |
| FTA SCPC; East Hemi Beam-Tahiti |
| SCPC, mixed CA & FTA, feeds |
| NBA feeds - probably CA - new Nov 2003 |
| PowVu CA & TBN-JCTV FTA |
| 16-QAM (not MPEG-2 compatible) |

## MPEG-2 DVB Receivers: (Data here believed accurate; we assume no responsibility for correctness!)

**Aston Simba 201**. Embedded SECA (Zee, Canal +); review SF#97. MediaStar 61-2-9618-5777.
**AV-COMM R3100**. FTA, excellent sensitivity (review SF May 1998); new version Sept. '99. Av-COMM P/L, 61-2-9939-4377.
**AV-COMM R3100(A)**. FTA, good sensitivity, ease of use exc (review SF May 2002). See above contact.
**Benjamin DB6600-CI**. FTA, Foxtel/Austar w/CAM+card. Autosat Pty Ltd 61-2-9642-0266 (review SF#72)
Coship 3188C. Review SF#107. Blind search FTA rcvr. Presently available from Satlink NZ www.satlinknz.co.nz. "In our humble OPINION, " buy with caution.
**eMTech** eM-100B (FTA), eM-200B (FTA + Clx2), eM210B (FTA + 2xCI + positioner); KanSat 61-7-5484 6246 (review SF#89)
**Humax F1-CI**. Primarily sold for TRT(Australia), does (limited) PowerVu (not Optus Aurora approved).
**Humax ICRI 5400** (Z). Embedded Irdeto + 2 CAM slots; initial units had NTSC glitch, now fixed. Widely available, SF#76.
**Humax IRCI 5410** (Z). Adaptable version capable of holding multi-CA systems (SF#98, 99). Widely available.
**Hyundai-TV/COM.** HSS100B/G (Pacific), HSS-100C (China) FTA. Different software versions; 2.26/2.27 good performers, 3.11 and those with Nokia tuners also good; later 5.0 not good. SATECH (V2.26)
**Hyundai HSS700**. FTA, PowerVu, SCPC/MCPC. Review SF March 1999. Kristal Electronics, 61-7-4788-8902.
**Hyundai HSS800CI**. FTA, Irdeto (with CAM) + other CA systems, PowerVu, NTSC. Kristal Electronics, above; review SF#63/
INNOVIA IDS3088. Review SF#111. Blind search FTA receiver. High quality IRD; no known source in Pacific but apparently available in Singapore.
ID Digital CI-24 Sensor. New August 2003; new lower noise tuner, extra sensitivity; CI interface slot Irdeto 1 & 2; review SF#109. Sciteq 61-8-9409-6677.
**MediaStar D7**. FTA, preloaded w/ known services, exc. software (review SF July 1998). MediaStar Comm. 61-2-9618-5777
**MediaStar D7.5**. New (May 00) single chip FTA; review June 00 SF. MediaStar Comm. Int. 61-2-9618-5777
**MediaStar D10**. FTA and Irdeto embedded CA. VG receiver; see review SF#96, August 2002. Contacts immediately above.
**MultiChoice (UEC) 660**. Essentially same as Australian 660, not grey market contrary to reports. Sciteq tel 61-8-9306-3738
**Nokia "d-box" (V1.7X)**. European, FTA, may only be German language, capable of Dr. Overflow software. SF#95, p. 14.
**Nokia 9200/9500**. When equipped with proper software, does Aurora, pay-TV services provided software has been "patched" with "Sandra" or similar program. See SF#95, p. 14. SF#96 p. 15. SatWorld 61-3-9773-9270 (www.satworld.com.au)
**Pace DGT400**. Originally Galaxy (Now Foxtel+Austar). Irdeto, some FTA with difficulty (Foxtel Australia 1300-360818). UECs replacing; Sept 18 (2003) "drop-dead" day; all were to have been "turned off" on that date (in fact, those with V1.13 CAMs may still be working).
**Pace DVR500**. Original DGT400 modified for NBC (PAS-2)/RSA use, with CAM equivalent to DGT400 but more reliable.
**Pace "Worldbox"** (DSR-620 in NZ). Non-DVB compliant NDS CA including Sky NZ, no FTA; similar "Zenith" version.
**Panasat 520/630/635**. MCPC FTA, Irdeto capable, forerunner UEC 642, 660. Out of production, spares fax ++27-31-593-370. No longer wotrk with Austar/Foxtel.
**Panasonic TU-DS10**. FTA + Irdeto CA; one of 2 IRDs approved by Optus for Aurora, but never available in Australia.
**Phoenix 111, 222**. PowVu capable, NTSC, graphics, ease of use. (111 review SF#57). SATECH (below)- 222; terminated
**Phoenix 333**. FTA SCPC, MCPC, analogue + dish mover. Detailed SF review SF#51. SATECH 61-3-9553-3399.
**Pioneer TS4**. Mediaguard CA (no FTA), embedded Msym, FEC, only for Canal+Satellite (AntenneCal ++687-43.81.56)
**PowerVu** (D9223, 9225, 9234). Non-DVB compliant MPEG-2 unless loaded with software through ESPN Boot Loader (see below). Primarily sold for proprietary CA (NHK, GWN+ PAS-2 Ku, CMT etc). For service only - callScientific Atlanta 61-2-9452-3388. For revision model D9850, see Scientific Atlanta (below).
PowTek. Blind Search Chinese sourced, field tests rate it highly. Source jason@adigitalife.com
**Prosat 2102S**. FTA SCPC/MCPC, NTSC/PAL, SCART + RCA. Sciteq 61-8-9306-3738.
**SatCruiser DSR-101**. FTA SCPC/MCPC, PowVu, NTSC/PAL. (Skyvision Australia 61-3-9888-7491, Telsat 64-6-356-2749)
**SatCruiser DSR-201P**. FTA SCPC/MCPC, PowVu, NTSC/PAL, analogue, positioner - (Skyvision - see above).
SATWORK ST3618. Blind search FTA receiver. Fast search, problems, especially in "memory-filing" system; review SF#111. Available DMSi at tim@dmsiusa.com.
SATWORK ST3688. Blind search, 3000 ch memory, multi-format RF modulatoi; improved version 3618. Review SF#113; available DMSi (above).
Scientific Atlanta D9223, D9225; Orig. PowerVu, superceded Dec 2003 by D9850. Commercial receiver, available TVO 61-2-9281-4481, John Martin
**Strong Technologies SRT2620**. SCPC, MCPC FTA, exc sensitivity, ease use, programming. Review SF#91 (ph. below).
**Strong SRT 4600**. SCPC, MCPC, PowerVu; exc graphics, ease of use, review SF#54. Strong Technologies 61-3-8795-7990.
**Strong 4800**. SCPC, MCPC, embedded Irdeto+ CAM slots, Aurora. Strong Technologies 61-3-8795-7990.
**Strong 4800 II**. SCPC, MCPC CAM slots x 2 for Aurora +, Zee, Canal +. Strong Technologies (above); review SF#103.
**Strong 4890**. SCPC, MCPC, 30Gb PVR, 2 CAM slots, DiSEqC 1.0, 1.2 (review SF#84); Strong Technologies, # above.
UEC Atlas/Titan. New July 2003, replacing DGT400 for Austar. No SCART, L-band loop; also available Rural Electronics 61-2-6361 3636.
**UEC642**. Designed for Aurora (Irdeto), approved by Optus; w/new software, C-band FTA; faultyP/S. Norsat 61-8-9451-8300.
**UEC660**. Upgraded UEC642, used by Sky Racing Aust., Foxtel-limited FTA. (Nationwide - 61-7-3252-2947); P/S problems.
**UEC700/720**. Single chip Irdeto built-in design for Foxtel; unfriendly for FTA. Power supply problems, seldom sold to consumers; propensity to fall off back of trucks.
**Winersat DigiBox 200**. C + Ku basic receiver but includes Teletext for NZ TVOne, 2 VBI. Satlink NZ, fax 64-9-814-9447
**Xanadu**. DVB compliant special-priced receiver for members of SPACE Pacific (Av-comm Pty Ltd, tel +61-2-9939-4377)

Accessories:

**Aurora smart cards**. MYCRYPT (Irdeto V2) cards now available (Oct. 2003), Sciteq 61-8-9409-6677.
**PowerVu Software Upgrade**: PAS-8, 4020/1130Hz, Sr 26.470, 3/4; pgm ch 11 and follow instructions (do not leave early!)

# WITH THE OBSERVERS

**AT PRESS DEADLINE**

ABC B1 12.258V went off 1 Dec, while ABC sources explained, "Darwin now connected via fibre." Then without explanation, Dec 4 *it was back*! Future? Unknown. Globecast C1/B3 transponders in massive rearrangement period - expect "chaos" through early January. B3/T11/12.438H *may be* on high performance beam (p. 28). SatFACTS January will NOT be mailed before Jan 16th - printer's holidays.

**AsiaSat 2/ 100.5E**: "Speedcast data service seems to have dropped 4078H package, perhaps to now only be on AsiaSat 4 (4120H)." (**JA**, Aust) "Reuters news (3905H), Sr 4.000, 3/4 has been FTA for days at a time but is unlikely to drop CA permanently." (**SW**, Malaysia)

**AsiaSat 3/ 105.5E**: "On 3669V, Sr 13.333, 3/4 a variety of test cards, occasional feeds, RR TV and VIC-TV have been noted." (**John L**, Qld) (Editor's note: This mux is on and off without notice - if not there, check again in a day or two!)

**AsiaSat 4/120E**: "3881Hz, Sr 26.500, 3/4 8 channel Chinese/ Taiwan bouquet first noted mid-November FTA: (1) STV3 (with CBN on-screen logo), (2) OTV2 (XZ on-screen logo), (3) OTV4, (4) Drama 1, (5) Drama2, (6) Amuse, (7) Sitcom and (8) Drama 4 (**DM**, NSW; **D.Leach**, NSW). (Editor's note: 1.8m in NSW registering in 70% region, 3m in NZ 75%.) "Sun TV 3881 FTA; PIDs 1016/1017; Enlight Stream PIDs 1021/1022." (**GS**, Australia) "Reports of As4 Ku on 12.354V, perhaps only on Asian beam; Sr8.000, 3/4." (**Billy T**, NT)

**Chinastar 1/87.5E**: "Incredibly strong signals noted 4090H, Sr 5.632, 3/4 feeds on this satellite - either they have turned on a new 'antenna' or the bird has suddenly been tilted. Shame there is not more there full time (4090 is occ feeds)." (**Stanley**, NSW)

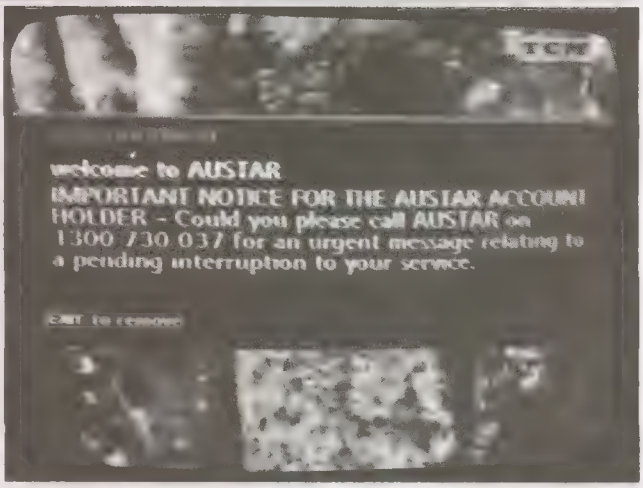
**Gorizont/140E**: "Gorizont 31 has replaced Gorizont 25 at this location; both are inclined orbit, only 31 is slightly less inclined (at this time!)." (**D. Leach**., NSW)

**I701/180E**: "NBA ([American] National Basketball Association) 'Barker Channel' noted testing 3803R, Sr 6.111, 3/4 PIDs 1160/1120, apparently western hemispheric beam." (**Steve**) (Editor's note: NBA is launching major world-wide expansion of their games, sending one game minimum per day via satellite to contract stations in more than 50 countries. Not likely to remain FTA but interesting while it lasts!) "Abu Dhabi TV Europe, HRT noted 3769R, FTA, Sr 20.000, 7/8. Also, British Telecom feeds noted on occasional basis 3821 and 3830R, Sr 5.632, 3/4; adhoc off feeds 3812R, Sr 6.111, 3/4." (**Storage**, NSW)

**IS804/176E**: "12.681V, Sr 15.000, 5/6; 5-6 Taiwan channels (NTSC) 'testing' - NZ spot beam (see map, p. 29, here)." (**CS**, NZ)

**MeaSat 2/148E**: "A-Skynet (Astro Mux) bouquet (11.602H, Sr 41.400, 3/4 briefly in mid-November was running all channels FTA." (**DM**, NSW)

**NSS6/95E**: "Australian beam, 12.593V, Sr 21.000,3/4" TV Moda, ESC 1, SIC International, Video Italia, TV Polonia, Public TV Armenia, TGRT, ATV Avrupa here along with several (Italian) radio channels - some may be tests; this is still a very 'fluid' package!" (**Ringo**, NSW) "12.631V apparently on Asian/Indian beam, Sr 2.441, 2/3, CA Sky-Crypt; 'Free-XTV'." (**Korlo**, Sri Lanka) "12.688V, Sr 26.087, 3/4 with SatLink test card and New Skies promo." (**Henry**)




Pay your bill. Austar's new Atlas/Titan/G3 (UEC) receiver has "another" unique feature - when you are late paying your bill, this appears on the screen for 1-2 days before they cut off receiver.

**Optus B1/160E**: "ABC 12.258V ABC NT service, off Dec 1-4, then back on again (**Westronics, NZ**) "Some playing around with TVNZ 12.456 (Sr 22.500, 3/4) - for example. video disappears but audio continues or bars up on Fv2; isn't this TVONE and TV2 service package really a part of the TVNZ + Sky support package for regional distribution of advertisements?" (**CS**, NZ) (Editor's note: It is and any downtime will be immediately felt by Sky viewers in southern portion of North island and all of South Island - a definite 'no-no'.)

**Optus B3/152E**: "TGN video - solution (suitable if not pure). UEC642 has trouble playing ThaiGlobaNetwork (12.525/12.720V, Sr 30.000, 2/3). With this receiver, one solution is to switch to Tamil TV (video channel 1) and then go directly to (not scrolling to) video channel 4 (TGN). " (**IF**, Qld.) "This note from Globecast MCR: 'From Wednesday afternoon 6 November we have been uplinking Optus C1, T2 MCPC in parallel to Optus B3, T7/12.657V. This will continue to at least 31 December after which new services will be added to the C1/T2 platform.' So what one really needs for Globecast are two dishes or a dual fed single dish after 31 December!"

**WITH THE OBSERVERS:** Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. Photos of yourself, your equipment or off-air photos taken from your TV screen are welcomed. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady. Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for January 16th issue: January 5by mail or 5PM NZT January 7th if by fax to 64-9-406-1083 or Email skyking@clear.net.nz.

## Updating: The ever-evolving world of Optus loading - continued from page 22

(1 December / **C1 156E** - continued)

T15/12.478H (Sr 27.800, 3/4) NIT of 7 transponders; otherwise "normal."

T16/12.518H (Sr 27.800, 3/4) Still is clone of T8 (TVSN only)

T17/12.558H (Sr 27.800, 3/4) NIT of 7 transponders. Note: T17 now contains the data for the Bouquet menu; works as "home" for UEC642, can load the Nokia-missing channels from T11 (p. 22).

T18/12.598H (Sr 27.800, 3/4). NIT of 7 transponders; otherwise "normal."

T19/12.638H (Sr27.800, 3/4). NIT of 7 transponders; otherwise "normal."

T20/12.688H (Sr 29.473, 3/4). NIT of this transponder only; loads only one channel (FTA "C1T20" message detailed p. 22, here, T14. This suggests some IRDs have/had this frequency stored as "home." Note: Network label is now "Optus."

The NITs that have 7 transponders are: T17/12.558H, T12/12.358H, T15/12.478H, T13/12.398H, T18/12.598H, T11/12.278H, T19/12.638H. Because T11 (no SDTs) is in the NIT, some receivers will "hang" for awhile when passing through. Note that the UEC642 can load channels that are on T11 using data from T17.

**2 December**: Optus has added SDTs and NIT back onto T11/12.278H; same as others listed in paragraph immediately above. T17/12.558H continues as "home transponder."

4 December: T11/12.278H - 3 new channels labelled AITV87, AITV88, AITV90 (AI =s Austar Interactive). Optus experimenting (again!) - test bouquet has TV channels allocated as 201-208, 361, 364, 366; radio channels 701-724. Test bouquet service menu lists 19 new channels (AITV71-AITV88 - not running) while Austar bouquet service menu has removed old, unused channels and added AITV71-AITV90.

## Optus B3 - 152E

This is a work-in-progress and our reports will reflect that over the course of the past 30 days some changes were superseded by additional changes.

**16 November**: Globecast (was) running three transponders as: (T5/12.525V), Sr 30.000, 2/3 (NZ + Aust beam); (T7/12.657V), Sr 30.000, 2/3 (NZ + Aust beam); (T8/12.720V), Sr 15.000, 2/3 (NZ + Aust beam). (At this time) bouquet on T5 and T8 were identical (5TV, 1 Ra): (1) Tamil TV Service (includes Australian advertising), (2) Adhoc (on some feeds uses SA PowerVu); (3) ERT, (4) TGN (some IRDs experienced problems loading the video here), (5) FR2 (frequently not in use). Radio - RA1 Radio Greece. (At that time) the bouquet on T7 (was) identical to Optus C1, T2/12.367V, Sr 30.000, 2/3 with 13TV and 14Ra. (1) Vision Asia 1 (Sony Entertainment, CA), (2) Vision Asia 2 (Zee TV, CA), (3) Vision Asia 3 (Zee Cinema, CA), (4) Vision Asia 4 (Star Plus, CA), (5) TRT International (FTA), (6) Trinity-TBN (FTA), (7) Da Ai TV (FTA), (8) Abu Dhabi TV (FTA), (9) Picture of Croatia (FTA), (10) TV Korea (CA), (11) MAC TV (FTA), (12) Duna TV (CA), and (13) BVN (FTA, Holland). Radio: (1) Raw FM, (2) TRT FM, (3) VOT, (4) ABS Radio, (5) Tamil Radio, (6) SNG IFB (studio feedback to camera crews in field using Adhoc channel for live feeds; sometimes amusing), (7) DMX Music (CA), (8) Kossuth Radio, (9) RNW3, (10) Emirates FM, (11) RNW1, (12) RNW2, (13) RVI-1, and (14) Voice of Croatia. Transponder T6/12.594V (Sr 30.000, 2/3) apparently is the ex-C1 T9/12.647V; no loading table, data (see C1, above).

**24 November**: T8/12.720V changes symbol rate from 15.000 to 30.000; 2/3. At this point it remains a clone of 12.525V (same NIT; still Australia + NZ). FR2 is/was running this date (T5/12.525V, 30.000, 2/3) with programming judged by many to be superior to TV5 and old CFI service. French adverts between programmes.

**25 November**: FR2 is now off on T5/12.525V. TGN (T5 and T8, now Sr 30.000, 2/3) continues "strange" with both audio and video glitching (UEC642 IRD) as if the transmission was NTSC (it is not - is PAL). A Nokia with DVB2000 indicates it is (indeed) PAL with a resolution of 544x576 pixels, 25 frames per second, with a constant video rate of 3.8 Mbit/s. Globecast has to be doing something wrong here! Today, Globecast's ERT (channel 3, T5 and T8) "looks better" than (for example) Tamil TV or TGN. Nokia indicates ERT has resolution of 704x576 pixels while Tamil and TGN both have 544x576.

**29 November**: 12.525V. FR2 (France) replaced by RTV21 (Kosovo/Kosova terrestrial channel). Perhaps worst example of digital compression in our skies. Video runs at constant 1.77 Mbit/s, has dreadful colour smearing and pixellation; video-audio out of sync. The TGN PMT problem. There are three entries on TGN PMT: 02 05b5 which is logically correct as it seems the video is at PID 05b5 (i.e. 1460 decimal). And, 03 058C which appears wrong as 03 means mono or dual-channel mono audio. Data elsewhere suggests 04 should be the correct entry since the service is in stereo (like BVN, for example). And, 85 1FFE. The 85 is unknown, no reference as to what it is supposed to mean or do. There is no entry for PCR (code 05) which is normally acceptable as by default IRDs will load the same PID as used for video absent a PCR PID. But prior SF reports noted a need to set the PCR to 8190 (as default). In fact, default on any IRD is 8191 (1FFF). 8190 happens to be 1FFE which is indeed this unusual 85 code entry. Perhaps 85 should have been 05 and that would in turn set the PCR. So possibly what Globecast should do is reset the PMT as 05 1FFE / 02 05b5 / 04 058C or in decimal 05 8190 / 02 1460 / 04 1420. TGN's PMT is located at PID 138C (decimal 5004).

**4 December**: Significant changes in T5/12.525V, T7/12.657V, T8/12.720V, T11/12.438H over course of day into evening. T11/12.438H now loads as Sr 30.800, 3/4 - but, there is an error here; wrong NIT! It says 12.500H, 30.800, 3/4 -the UEC642 will not load this unless the LNB LO is offset (12.500 - 12.438 = 62 MHz). There is a PAT, loading 7 TV channels + 3 radio. TV: (1) BVN & RNW (being a radio channel on 2nd sound track), (2) TRT (also 2 sound tracks), (3) SET (Sony Entertainment), (4) TCT (a religious channel with Benny Hinn), (5) "God Channel" (appropriately www.god.tv), (6) 3ABN (another religious channel), (7) THAI TV & Radio Int. Radio: (1) TRT FM & RV12 (2 audio soundtracks), (2) VOT, (3) RNW1 & 2 (2 audio soundtracks). A Nokia (with DVB2000) reveals no CAT. B3 Vt summary: T1/12.277V (unknown, weak); T2/12.345V (Sr 30.000, 3/4; NO NIT, PAT); T3/12.407V (Sr 30.000, 2/3 Aurora Business); T4/12.482V (unknown, weak); T5/12.525V (Sr 30.000, 2/3 - Globecast); T6/12.594V (Sr 30.000, 2/3; no NIT, one PMT, no SDTs - possibly Optus data moved from C1); T7/12.657V (Sr30.000, 2/3 - Globecast); T8/12.720V (Sr30.000, 2/3 - Globecast).

(**Paul B**, Waipu Cable, NZ) "Centrelink now here from C1; 12.720V." (**Leroy**) "RTV 21 Sat noted (test?) 12.525V, Sr 30.000, 3/4; V1660, A1620. " (**Tool,** NSW) Also - see p. 28.

**Optus C1/156E**: See changes p. 22, 28, here.

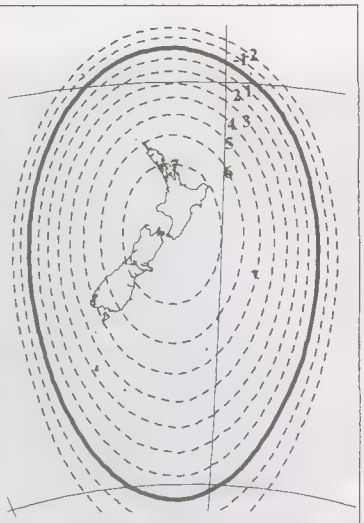
**PanAmSat PAS2/169E**: "Asian Bible study programme/ feed 4055H, Sr 5.420, 2/3 (V1160, A1120, SID 10) as well as 3804V (Sr 4.444, 2/3, V3601, A3604, SID1)." (**B.Richards**, Aust) "South Korea's MBC and KBS World now on 3771H, CA, PIDs 33/34 and 81/84." (**KN**) "TARBS mux 4090V has greatly reduced power, thereby cutting off smaller dishes." (**JT**, NSW)

**PanAmSat PAS8/166.5E**: "Discovery Channel China is new on 3764V, Sr 19.850, 3/4 PowerVu CA." (**Sammy**, PNG) "Some changes on 3860H, Sr28.000, 5/6; MAC TV (PIDs 921/920), Pinoy Central (CA) and tests cards." (**Arthur**) "CSN has new PIDs on 3860 - V450, A451." (**Kenny**) "China Radio International (also heard daily on WRN) full-time feed 3829H (Sr 13.240, 3/4) within CCTV mux; APID 1422." (**Kenny**)

**Soapbox**: "Back when C1 replaced B3, the UEC software upgrade was removed from 12.407V." (**NS**, NSW) "Can anyone verify that Innovia blind search, as reported in newsgroup, will actually identify/find Imparja PIDs?" (**Archibald**) "If that is really a picture of Rolf D (p. 1, SF#111), he certainly must have added considerable weight since leaving Thailand!" (**IF**, Qld). "Strangest video department. During Rugby World Cup Grand Final, carried by ADHOC channel on Globecast 12.525H. The audio was from the French commentary team while video was from a single camera located at backs of French commentators. The camera was finally used at end of game for commentators to do their 'wrap' of match, for French FR2 network." (**IF**, Qld) "As reported by Craig Sutton (SF#111 - Soapbox), TGN audio is indeed 32 kHz sampling rate but they are the ONLY true stereo channel in this mux. Tamil TV is single (mono) channel, ADHOC is dual channel (not same as stereo), ERT is single-channel, and Radio Greece is mono." (**AI**, Vic). "Goldcards are insidious. I now understand that even if Austar or Foxtel switch off the original card (which the gold card emulates as a clone) - such as the customer cancelling the subscription - the goldcards they were programmed from continue to work!" (**Anthony L**, NSW). "In reading the Optus Aurora release concerning phasing in of Irdeto MYCRYPT over a 'maximum period of 5 years starting late in 2003' (their language), it appears those who presently depend upon a V1 format card will be required to *purchase* a replacement at some point. A key line in the release, perhaps overlooked by many reads, 'Most existing cards will reach the end of their *natural life* before this time (end of 2008) and will then need to be replaced by the new MYCRYPT card.' " (**LegalSam,** NSW) (Editor's note: *'Natural life'* is a new term when applied to CA smartcards - does anyone know of a study about the *'natural life'* of these devices?) "I understand that Toroidal dishes as large as 1.2m are available in Europe - does anyone know a source?" (**DM**, NSW) "Lowest cost DVD recorder? Aldi (a German owned supermarket chain) is advertising a Tevion brand model for A$549." (**AI**, NSW) "OK - so we were told the proposed New Zealand-Pacific DTH service, IMPACT, was waiting until B3 and C1 swap was completed before they could enter into serious negotiations for B3 Australia + NZ transponder space. That was months ago. It was one year ago that this proposed service surfaced. I am

**Intelsat IS-804**

Spot beam (over NZ only) is 52 dBw EIRP at centre; next dashed line 51 dB and down in 1 dB steps to broad solid oval (44 dBw) - know in trade as "beam edge."



176E test service carrying Taiwan originated NTSC Chinese (Cantonese language) channels (5, sometimes 6) at 12.681V, Sr 15.000, FEC 5/6. Unknown who or why, service there.

**FOXTEL's digital conversion**

Foxtel, 25% owned by News Corp, 25% by PBL and 50% by Australia's Telstra, posted an operating loss of A$27M in the period July 1 - September 30; up from A$24 M in the same period during 2002. Foxtel has arranged a $550M "loan" to cover their anticipated costs of converting from their existing analogue cable TV system to a digital cable system, and to expand their delivery of programming channels through Foxtel's satellite service on C1. Foxtel currently delivers 47 channels to cable subscribers, give or take a few (it changes weekly), a similar number to satellite customers. They have indicated "100+ channels" for both cable and satellite when the digital conversion happens. The pacing item here is the roll-out of digital on the cable network - where all existing viewers will receive a new digital STB and the cable plant is being rebalanced for the new digital muxes. Foxtel growth has stalled at 23% of Australian homes, 20% of all subscribers "churn" or drop the service each year indicating a lack of long term viewer commitment to the offering. Foxtel believes the growth to 100+ channels and innovative new services not available (via cable) to subscribers - such as pay per view movies - will restart subscription growth.

Foxtel cable presently supplies 2 (ABC), 7, 9, 10 and SBS analogue service through cable to subscribers. Foxtel satellite is limited to 2/ABC and SBS but plans to add 7, 9 (owned by 25% Foxtel owner PBL) and 10 to the satellite package as well. There are logistics challenges here - 9 Melbourne, for example, may not be carrying the same programming as 9 Sydney at any given moment and in each case, viewers within normal terrestrial TV reach watching via satellite (or cable) must be limited to their "normal off-air available" 9 programming. Multiply this challenge by the addition of 2, 7, 10 and SBS, and then by each of the major city markets (Adelaide, Brisbane, Canberra, Melbourne, Perth and Sydney) and you have 5 channels times 6 markets which must be uniquely delivered to viewers by geographical location. Sky NZ handles this situation by creating special TVOne and TV2 "feeds" which are designated to their viewers by geographic area (3 total in the case of NZ). This requires additional satellite bandwidth (transponder space) and customised satellite software to ensure that viewers are fed the "correct" versions of each of the 5 national network programming packages. Target date to turn analogue off? Originally March 31; now June 30. And that is likely to "slide."

beginning to lose confidence it is or ever was 'real'." (**Benjamin**, Auckland) (Editor's note: We are told, "testing after mid-December.") "Correction: Our web site is www.aDigitaLife.com." (**Jason R.**) "Believe we are only company in the world offering broadband dipole and other antennas for not only old-style 1.8, 2.1 - 2.7 and 2.4 GHz bands but also for newer 3.4 and 5.8 GHz bands." (tim@dmsiusa.com) (Editor's note: DMS has provided SatFACTS with their newest blind search receiver - 3688 - which we will be reviewing in January. 3,000 memory channels, apparent end of duplicate loadings of same channels, multi-standard modulator (PAL B/G/D/I/K and NTSC) are some of features not found in earlier models.) "Clearing the way - AsiaSat 4 (122E) and Shin Satellite (scheduled to 120E during 2004) have reached 'frequency co-ordination' agreements allowing Shin to proceed with launch." (**Grady**) "Innovia in Australia-NZ? Try Grant Wheaton (grant@satmax.ws)." (CS, NZ)


**SatFACTS Plus for Australians!**

WE are the source for subscriptions throughout Australia. Best delivery, extras BONUS material included!

**AV-COMM Pty Ltd.**

emailcgarry@avcomm.com.au or (02) 9939


**New Zealand's shot at (rural) high speed Internet**

These are the options - present and 12 months into the future.

**Optus (through C1/B3)**: Installation in region of $8,000 for two-way hardware, annual charges in region of $1,000. Download speeds to 200 kbps, upload speed 77.6 kbps. Availability? Now.

**Shin Satellite (through new bird to be launched 2004)**: Installation in region of $1,000 (85cm receive-transmit dish), monthly-annual charges not announced. Download speeds to 1 Mbps (demonstrations using I804/176E were 386 kbps).

Note: Shin's satellite will be at 120E, a look angle near 20 degrees for Auckland, 18 degrees for Wellington. At these angles, some locations will have terrain blockage whereas Optus birds vary from 38 to 42 degrees "look angle."

**BCL (using terrestrial 3.2-3.4 GHz last-mile links).** Requires LOS (line of sight) from user location to BCL sites; installation in region $1,500; annual fees in region $1,200 and upwards. Thru-put speeds - 256 claimed, not guaranteed.

**Caution**: "Capped" thru-put totals (how much data as measured in Mbits) are the wild card here - high speed is only part of the equation; how much the user pays for the total download per month is quite another issue.

Aurora 'Service Distributor' contact numbers

ABC + SBS 1300 301 681
Imparja 1300 301 683
Seven (Qld) 1800 501 063
WIN/GWN 1300 301 681


**Hualin Pty Ltd**

Satellite Equipment Specialists
Import and wholesale

Unit 51/159 Arthur ST Homebush West, Sydney Australia 2140

Phone: (02) 9763-1366 | Fax: (02) 9763-1356

Email: hualin@optushome.com.au | Web: www.hualin.com.au

ALL PRICES EXCLUDE GST, THIS MONTH SPECIALS!

**Arion 1200 (PRICE DROP)**

- Free to air
- Fast processing
- User friendly
- Slick design
- $200 AUD

**Success 5860 (PRICE DROP)**

- Fast process
- **EXTREMELY** User friendly
- **All the functions** you can possibly want in a FTA receiver
- $160 AUD

**Supernet (SPECIAL)**

- IRDETO 2.09 Embedded
- Symbol Rate Range from 2 – 45
- Suitable for LBC/ AURORA
- **Autoscan Function (Unique to this receiver)**
- $250 AUD

**Dion CI + CAM (PRICE DROP)**

- With Cam IRDETO 2.0[illegible]
- Nice interface design
- 2 CI slots
- User [illegible]
- Symbol Rate from 2 - 4
- $370 AUD

**Supernet TERRESTRIAL RECEIVER**

**(NEW) DVB-T**

- VERY easy to use, **Specially designed for housewives**
- EPG for up to 64 DAYS!
- Teletext function
- RCA/S-VIDEO/RGB/SCART Outputs
- 16x9 and 4x3 widescreen
- $210 AUD

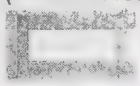
**Accessories**

2.4G AV sender – $120 AUD **Special**
LNB CBand Zinwell - $40
LNB CBand 1 Cable solution -$ 70
LNB KU - $35
LNB KU Twin output - $75 **SPECIAL**
Actuator SuperJack 18" - $50
Actuator SuperJack 24" - $55
Positioner EZ2000 - $60 **SPECIAL!!!**
Positioner SAP2200 - $85
**Positioner VBox Diseq 1.2 - $70**
**Cable RG6 Dual Shield - $70/305m**
**Cable RG6 Quad Shield - $80/305m**
Actuator Cable CAT5 – $80/305m

**Solid/Mesh Dish**

| | |
|---|---|
| 0.45 m | 2.13m |
| 0.6 m | 2.3m |
| 0.65 m | 3.07m |
| 0.8 m | Light Duty |
| 0.9 m | Medium Duty |
| 1.2 m | Heavy duty |
| 1.8 m | available |
| From $25 - $200 AUD | From $130 - $550 AUD |

**IRDETO 2.06B CAM (PRICE DROP)**



Price: $180 [illegible] product

Suitable for all channels from [illegible] B3

**Banking Details**

**ANZ Bank**
**Branch 012432**
**Account 3474 57536**

# AT Sign-off

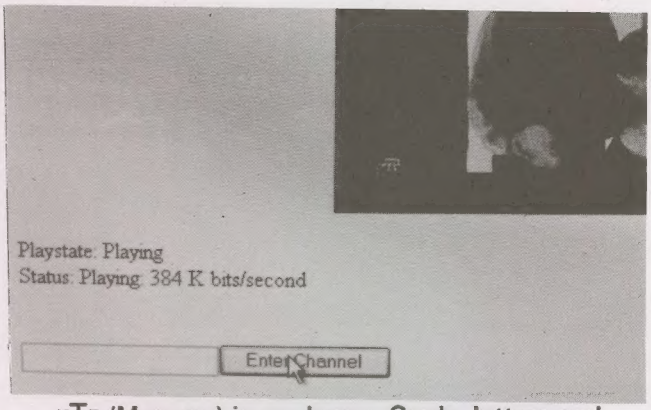
US$20,000 just to watch "home town TV???" Who but a crazy person would pay that when virtually everyone everywhere now has so much television that the most common complaint is, "*I don't watch <u>those</u> channels - why should I pay for them?*"

Free-to-air ethnic television, whether from India or Russia or Albania, has a strong emotional tug on the hearts of émigrés world-wide. You might be an Australian or Kiwi in physical presence, but "home town TV" is a powerful magnet that seldom dissipates from an immigrant. Thousands have built a business providing FTA TV service from a C (or Ku) dish system and while this business was healthy a few years back *before* firms such as TARBS (in Australia) began selling "home town TV" to immigrants, it continues to this day as the bedrock of our industry.

Export of hometown TV - DW from Germany, RAI from Italy, WorldNet from the USA, NHK from Japan to name four - is considered an important arm of national governments. They pay big dollars annually (the budget of DW is more than A$200 million a year) to create an "export TV service" which will allow home country travellers, home country workers on overseas assignment, bureaucrats manning embassies and consulates, and the common folk who have immigrated, to "stay in touch" via television.

But export television is seldom (if ever) <u>real</u> "home town TV." Russia's NTV, for example, produces a special package of programming drawn from a variety of sources (not all of them NTV as it is seen at home) for "export." NTV is carried world-wide by relay services such as TARBS (or DISH TV in the USA) and subscribers in Australia or America pay money each month just to have access to NTV's single channel of export version programming. It speaks Russian, it is from their home country, but more often than not it has been "sanitised" for international delivery.

During November I sat in a room with twenty Russians, in America, and we were watching Moscow TV (they intently - me with curiosity, watching *them* more than the TV screen) as delivered through the Internet system you read about here on p. 6. The service carries 66 channels, 23 of which are pure-Russian-local. The fellow who had the remote control in his hand could not stop channel surfing. His excitement was beyond control as he switched through the Moscow evening news (head to head on several channels simultaneously) to a live Russian hockey game to a couple of soap operas. Pausing on one channel, we all exploded in laughter when a serious discussion about Russia's non-involvement in Iraq resulted in one politician reaching for a glass of water (well - it might have been Vodka - a transparent liquid at any rate) and in great anger threw the glass and contents at another show participant because the two could not agree on Russia's role in Iraq. Immediately after this happened, a Russian lady sitting near me dialled a number on her Nokia cell phone and began




**КТВ (Moscow) in my home. Cards, letters and unannounced visits from people I don't even know.**

speaking in a loud voice to someone in Moscow. The rough translation someone did for me was this.

"*Did you see what* (name of politician) *just did to* (name of second politician) *on HTB* (name of Russian channel we had been watching)?"

Live and in real time. There is no substitute, and perhaps for many, price is no object. For now it is possible, for the first time in man's history on earth, for you to be sitting 1,000, 10,000 or more miles from "home" and remain connected - totally connected, to the *same* events, the *same* flavour, the *same* headlines as those folks you left behind.

The first seller of a home satellite C-band dish system in the world, Scientific Atlanta, got US$37,000 for a 4.5m dish and receiver, installed, in 1979. Those who pioneered lower cost home dish systems in the wake of SA's pioneering nudged the price down to under $20,000 during 1980 while thousands of folks stood in line waiting for their own system to be installed. And the SA and other systems were not selling "home town TV" which is an emotional attachment perhaps beyond price. It was, simply stated, *real TV*. No more.

So will Internet delivery of "*home town TV*" take the world by storm? Not at $20,000 a pop but these are early days in this new technology and now that we all know it is *really* here, *really* possible, and so quick to install and simplistic to use, the future can only be unlimited.

The folks who turned C-band home dish systems into a household word were not working for (nor on behalf of) major firms. SA lasted less than a year, driven out of (this) business by backyard firms who within 12 months had worked out clever ways to reduce the C-band dish systems to under $6,000 installed. Within 3 years, what SA started at $37,000 could be bought for under $2,000. *Of course* Internet TV will follow this same pathway; it's all about circuit boards, ICs, and volume production.

You say you, a member of this industry, have a client for this service? Someone with US$20,000 and a huge hunger to have TV "from home?" Any home - India, China, South Africa - anyplace on earth with either local cable or local DTH (or even local off-air VHF-UHF)? Here are the rules: (1) At this early development stage, I will not - <u>cannot</u> - divulge *who* is doing this, from where. (2) But I can "arrange" for an authorised franchisee distributor to contact your client and there is a suitable "finder's fee" payable to you when the sale is completed. Now, where did I lay the remote control for the new Tokyo server, coming on line shortly?

# EVERY REFERENCE WORK YOU COULD POSSIBLY NEED
## - from SatFACTS, of course!

Check (✓) off what you wish to order - include your details at bottom.
Fax (++ 64 9 406 1083) or mail (SatFACTS, PO Box 330, Mangonui, Far North, New Zealand)

**SatFACTS Subscription**

ONE YEAR (12 issues): ☐ Australia and Pacific - A$96 per year airmail; ☐ New Zealand - NZ$70 per year, fast post; ☐ Balance of world - US$75/Euro75 per year airmail.
THREE YEARS (36 issues): ☐ Australia and Pacific - A$220 airmail; ☐ New Zealand - NZ$160 fast post; ☐ Balance of world - US/Euro $175 airmail.

**Hard Core (Serious) "How to do it" References**

☐ Tech Bulletin (TB) **9402**: MATV (master antenna terrestrial) systems - wiring up a home, motel, hotel, camp site from one set of antennas - $15 all regions

☐ TB **9404**: Home Satellite Dish Systems. "Newbie" trying to work out what all those terms means and how a home system goes together? Perfect. $15 all regions

☐ TB**9405**: Satellite to Room Systems. Combining MATV (9402) with satellite (9404) to distribute satellite TV reception to multiple outlets - 2 to 1000+! $15 all regions.

☐ TB**9301**: Terrestrial Antenna Systems to eliminate co-channel interference, stack for additional gain. $15 all regions.

☐ TB**9302**: (Terrestrial) Weak Signal Reception Techniques; off-air TV reception to 300km+. Seriously detailed. $15 all regions.

☐ TB**9303**: UHF - Big Antennas for 300km reception over ground! Seriously detailed. $15 all regions.

☐ TB**9304**: Identifying and eliminating noise interference from fence lines, signs, electrical appliances. How to cleanup marginal TV reception. $15 all areas.

☐ TB**9305**: Cable TV - the basics. How a cable system works, how you can build one! $15 all regions.

☐ **Nelson Parabolic Manual**. The "bible" of building your own 13 foot dish from scratch. Serious stuff for dedicated builders. $15 all regions (supply limited).

**SOFT CORE - recent back issues of SatFACTS (while supply lasts)**

☐ **SF#93** (May 2002) - European Piracy, hundreds of piracy web sites - $10 all regions.

☐ **SF#96** (August 2002) - Nokia BDM, Faster Channel Zapping with Nokia - $10 all regions

☐ **SF#97** (September 2002) - Turning FatCAMs into multiCAMs - $10 all regions

☐ **SF#99** (November 2002) FunCARDS - how they work, software mods for Humax - $10 all regions

☐ **SF#100** (December 2002) d-box2 BIG report! AC3 Surround Sound for Nokia, PanAmSat's Terrorist Problem - $10 all regions

☐ **SF#101** (January 2003) d-box2 conversion to Linux, SA power supplies - $10 all regions

**WHO YOU ARE (where we ship to) - How Much You Are Spending!**

My name _____

Company name (if applicable) _____

Ship to address _____

Town/city _____ Postal code _____ State/Province _____ Country _____

☐ Cheque in the amount of ____$_____ (to SatFACTS) enclosed

☐ Charge to my VISA/MASTERCARD (sorry - no others) as follows: (12/03:#102)

____$_____ _ _ _ _ _ _ - _ _ _ _ _ _ - _ _ _ _ _ _ - _ _ _ _ _ _ expires _____/ _____

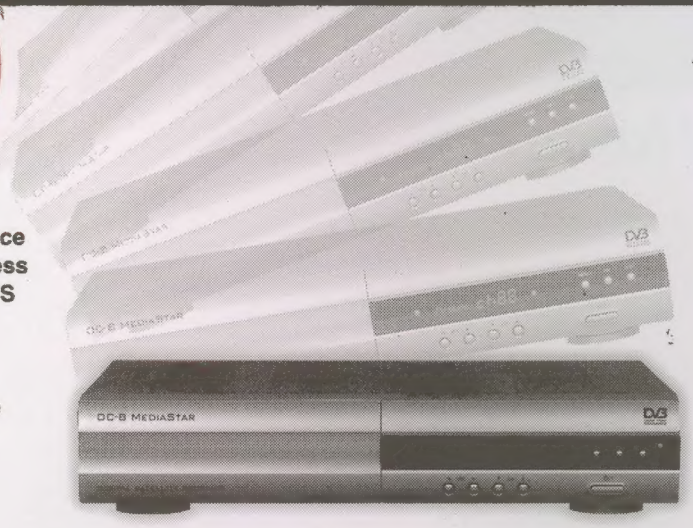
Name as appears on card _____

**Fax to + +64 9 406 1083 or mail to SatFACTS, PO Box 330, Mangonui, Far North, New Zealand**

# THE HAS LANDED

NEW DC-8 MediaStar

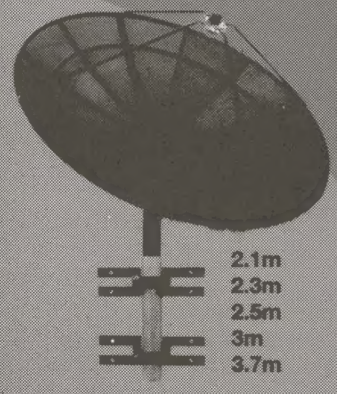
- 2 Slot common interface for Irdeto, Seca,Viaccess
- Symbol rate 2-45 MBPS
- Digital Audio AC-3 support by SPDIF
- S-Video output
- Close Caption subtitle and Teletex
- DiSEqc 1.0 and 1.2
- NTSC-PAL auto converting
- DSR to DSR copy




MediaStar Communications International
24 Bosci Road
Ingleburn NSW
2565 Australia

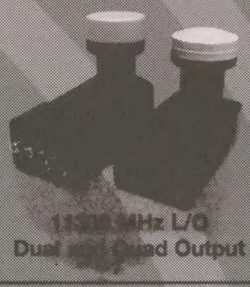
Tel: 02 9618 5777
Fax: 02 9618 5077
Opac@bigpond.com.au

MediaStar
High Performance



2.1m
2.3m
2.5m
3m
3.7m

Heavy Duty Frame
Stronger Mesh



11300 MHz L/O
Dual and Quad Output

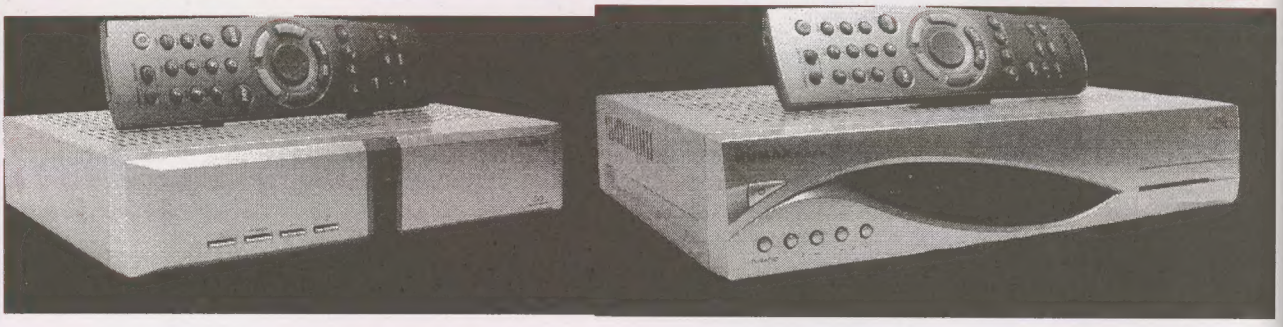
Mustang Actuators
18", 24", 36", 56"

EZ2000+
Positioner

Making communications shine. MediaStar

SCITEQ Pty Ltd ABN 34 009 235 090
Ph: +61 8 9409 6677
Fax: +61 8 93095210
Web: www.sciteq.com.au
Email: sales@sciteq.com.au

# HUMAX



## Humax IR-ACE S  Humax IR-ACE M

# Embedded Irdeto Digital Satellite Receivers

- Software upgradable from home PC
- Australian specific software
- Latest software FREE on the web
- Channel/Transponder data upload/ download to PC
- 1 - 45 Msym Symbol Rate
- DiSEqC 1.0 switching
- DiSEqC 1.2 positioning
- 22kHz Switching
- 4:3 or 16:9 aspect ratio
- Embedded IRDETO (compatible Euro I IRDETO 1 & 2 services)
- SCPC & MCPC from C / Ku Band
- User Friendly OSD
- Supports DVB Subtitling & DVB Teletext
- Electronic Programme Guide

| Conditional Access Interface | |
|---|---|
| Irdeto Embedded | 1 Smart Card Reader |
| **Tuner & Channel** | |
| Input Connector | F-type, IEC 169-24, Female |
| Frequency Range | 950 ~ 2150 MHz |
| Input Impedance | 75 Ω unbalanced |
| Signal Level | -25 ~ -65 dBm |
| IF Frequency | 480 MHz |
| IF Band width | 36 MHz |
| LNB Power & Polarization | Vertical: +13.5 V<br>Horizontal: +18 V<br>Current: Max. 500 mA<br>Overload Protection |
| 22 kHz Tone | Frequency: 22 ±4 kHz<br>Amplitude: 0.6 ±0.2 V |
| DiSEqC Control | Version 1.0/1.2 Compatible |
| Demodulation | QPSK |
| Input Symbol Rate | 1 - 45 Msym |
| FEC Decoder | Convolutional Code Rate 1/2, 2/3, 3/4, 5/6 and 7/8 with Constraint Length K=7 |
| **A/V & Data In/Out** | |
| VIDEO | RCA/Cinch, Video Output (CVBS) |
| AUDIO R/L | RCA/Cinch Volume and Mute Control (Resolution: 20 bits DAC, Max. 2 Vrms) |
| **Data Port** | |
| RS 232C | Transfer rate 115 kbps |

| MPEG Transport Stream A/V Decoding | |
|---|---|
| Transport Stream | MPEG-2 ISO/IEC 13818 |
| Profile Level | MPEG-2 MP@ML |
| Input Rate | Max. 15 Mbit/s |
| Aspect Ratio | 4:3, 16:9 (Letterbox) |
| Video Resolution | 720 x 576 |
| Audio Decoding | MPEG/MusiCam Layer I & II |
| Audio Mode | Single channel/Dual channel<br>Joint stereo/Stereo |
| Sampling Rate | 32, 44.1 and 48 kHz |
| Graphic Engine | 3-OSD plane<br>1-background plane<br>H/W Bit Blit<br>~16 bits color |
| **RF-Modulator** | |
| RF-Connector | 75 Ω, IEC 169-2, Male/Female |
| Frequency | 470 ~ 860 MHz |
| Output Channel | CH21 - 69 for the Remodulator |
| TV standard | PAL B/G/I/D/K selectable by Menu |
| **Power Supply** | |
| Input Voltage | 90 ~ 250 V AC, 50 Hz/60 Hz |
| Type | SMPS |
| Power Consumption | Max. 30 W |
| Stand by | 9 W |

*Physical Specifications*

| | IR-ACE S | IR-ACE M |
|---|---|---|
| Size (WxHxD) | 260x50x180mm | 310x60x225mm |
| Weight (Net | 1.3 kg | 3.0kg |